APPENDIX A

TO PLAINTIFF'S SUPPLEMENTAL BRIEF

ON COLLATERAL ESTOPPEL/ISSUE PRECLUSION IN

RELATION TO MOTION TO STAY

PLAINTIFF'S APPENDIX A
FINDINGS OF FACT AND CONCLUSIONS OF LAW

Plaintiff's Appendix follows Judge Glady Kessler's Table of Contents at *United States v. Philip Morris USA, Inc*., 449 F.Supp.2d 1, 15 (D.D.C. 2006), *aff'd*, 566 F.3d 1095 (D.C. Cir. 2009), attached as Appendix B to plaintiff's collateral estoppel-issue preclusion brief.

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2. Research Activities of TIRC/CTR
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D. TOBACCO INSTITUTE

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1. Witness Development
2. CTR Special Projects
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Kessler Table of contents Part A Below: Plaintiff's First Amended Complaint ("FAC") FAC, First Cause of Action - Negligence; Third Cause of Action - False Representation; and, Fourth Cause of Action - Deceit, Fraudulent Concealment

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Kessler Table of contents Part C Below: FAC, First Cause of Action - Negligence; Second Cause of Action - Strict Products Liability; Third Cause of Action - False Representation; Fourth Cause of Action - Deceit, Fraudulent Concealment; and, Kessler Table of contents Sixth Cause of Action - Breach of Express Warranty

Kessler Table of contents Part E Below:FAC, First Cause of Action - Negligence; Second Cause of Action - Strict Products Liability; Third Cause of Action - False Representation; Fourth Cause of Action - Deceit, Fraudulent Concealment; and, Sixth Cause of Action - Breach of Express Warranty

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KESSLER'S TABLE OF CONTENTS - PART V.A.:

V. A. Defendants Have Falsely Denied, Distorted and Minimized the Significant Adverse Health Consequences of Smoking for Decades

Kessler Finding of Fact Nos. 509 through 604; 606 through 702; 704 through 801; 803 through 814; and, 821; 822 through 827

Exemplars of Relevant Findings of Fact:

509. Cigarette smoking causes disease, suffering, and death. Despite internal recognition of this fact, Defendants have publicly denied, distorted, and minimized the hazards of smoking for decades. The scientific and medical community's knowledge of the relationship of smoking and disease evolved through the 1950s and achieved consensus in 1964. However, even after 1964, Defendants continued to deny both the existence of such consensus and the overwhelming evidence on which it was based.

1. Cigarette Smoking Causes Disease

510. Cigarette smoking and exposure to secondhand smoke (also known as environmental tobacco smoke or "ETS") kills nearly 440,000 Americans every year. The annual number of deaths due to cigarette smoking is substantially greater than the combined annual number of deaths due to illegal drug use, alcohol consumption, automobile accidents, fires, homicides, suicides, and AIDS. Approximately one out of every five deaths that occur in the United States is caused by cigarette smoking.

511. Cigarette smoke contains carbon monoxide, nitrogen oxides, cyanide, benzopyrenes, radioactive polonium, arsenic, aldehydes, nitrosamines, numerous toxins, and other human carcinogens.

513. The risk of developing lung cancer increases with an increase in smoking. Individuals smoking ten to twenty cigarettes per day have a ten-fold increased risk and individuals smoking forty or more cigarettes per day-two packs and over-have more than a twenty-fold increased risk of developing lung cancer. This rate of risk is referred to as "relative risk."

515. Cigarette smoking causes chronic obstructive pulmonary disease ("COPD").

516. COPD, previously referred to as "emphysema" or "chronic bronchitis," was found to be causally related to smoking in 1964.

533. Cigarette smoking causes diminished health status.

2. Scientific Research on Lung Cancer up to December 1953

a. Scientists Investigating the Rise in the Incidence of Lung Cancer Linked Smoking and Disease before 1953

538. By the middle of the twentieth century, physicians and public health officials in the United States had widely noted an alarming increase in the number of cases of lung cancer. Virtually unknown as a cause of death in 1900, by 1935 there were an estimated 4,000 deaths annually attributed to lung cancer. A decade later, the estimate of deaths attributed to lung cancer had nearly tripled.

539. The rise in lung cancer had followed the dramatic increase in cigarette consumption which began early in the twentieth century. Annual per capita consumption of cigarettes in 1900 stood at approximately forty-nine cigarettes; by 1930, annual per capita consumption was over 1,300; by 1950, it was over 3,000. Even though the increases in lung cancer cases and deaths substantially lagged behind the increase in cigarette use, the apparent association led to considerable speculation about what, if any, relationship existed between the two.

546. By the end of the 1940s, more evidence linking smoking to disease began to appear. Beginning in 1948, under the auspices of the Medical Research Council, a unit of the recently created National Health Service in the United Kingdom, Bradford Hill and Sir Richard Doll conducted a study to investigate the rising incidence of lung cancer. Following World War I, Hill had become one of the most distinguished medical statisticians in Great Britain. Doll, a physician, also possessed sophisticated training in statistics and epidemiologic methods. They realized that questions concerning the causality of systemic chronic diseases would not readily succumb to experimental laboratory investigation (unlike the study of infectious disease where specific causality was important).

556. By late 1953, there had been at least five published epidemiologic investigations, as well as others, pursuing carcinogenic components in tobacco smoke and its impacts. These researchers' understanding of the link between smoking and lung cancer was markedly more certain than the case studies and preliminary statistical findings concluded earlier in the century. While some of the epidemiological methods were innovative, they were completely consistent with established scientific procedure and process. Epidemiology was not just based on statistics, but also was an interdisciplinary, applied field. The studies

had substantially transformed the scientific knowledge base concerning the harms of cigarette use. Unlike earlier anecdotal and clinical assessments, these studies offered new and path-breaking approaches to investigating and resolving causal relationships.

557. Medical historians would come to view these studies as among the most important contributions to public health and medicine in the twentieth century. They offered a sophisticated scientific methodology for resolving central questions of causality.

b. By 1953, Defendants Recognized the Need for Concerted Action to Confront Accumulating Evidence of the Serious Consequences of Smoking

559. The [Reader's Digest] "Cancer by the Carton" article, published in 1952 explained:

> A study of 684 cases, made by Ernest L. Wynder and Evarts A. Graham for the American Cancer Society and published in the AMA Journal, May 27, 1950, stated this conclusion: "Excessive and prolonged use of tobacco, especially cigarettes, seems to be an important factor in the induction of bronchiogenic carcinoma."
>
> More recently Wynder, now associated with Memorial Cancer Center in New York, expanded the statement: "The more a person smokes the greater is the risk of developing cancer of the lung, whereas the risk was small in a nonsmoker or a light smoker."

3. Developments Between 1953 and 1964

a. Between 1953 and 1964, the Evidence Demonstrating that Smoking Causes Significant Adverse Health Effects Grew Although No Consensus Had Yet Been Reached

570. During the 1950s, the evidence implicating smoking as a cause of lung cancer continued to grow. The published research employed different methodologies and was reported in well-respected peer reviewed journals. Such research utilized clinical observation, population studies and laboratory investigation, all of which, alone or in combination, are traditional methods of scientific investigation

582. ....The Public Health Service believes that the following statements are justified by studies to date.

1. The weight of evidence at present implicates smoking as the principal etiological factor in the increased incidence of lung cancer.

2. Cigarette smoking particularly is associated with an increased chance of developing lung cancer.

3. Stopping cigarette smoking even after long exposure is beneficial.

4. No method of treating tobacco or filtering the smoke has been demonstrated to be effective in materially reducing or eliminating the hazard of lung cancer.

5. The nonsmoker has a lower incidence of lung cancer than the smoker in all controlled studies, whether analyzed in terms of rural areas, urban regions, industrial occupations, or sex.

6. Persons who have never smoked at all (cigarettes, cigars, or pipe) have the best chance of escaping lung cancer.

7. Unless the use of tobacco can be made safe, the individual person's risk of lung cancer can best be reduced by elimination of smoking.

593. In sum, by the early 1960s, the view of the scientific community had reached the conclusion that the evidence supporting a causal relationship between smoking and lung cancer was sufficiently established and recognized -albeit not to a scientific certainty-that it was appropriate to warn the public of the dangers it faced.

b. Before 1964, Defendants Internally Recognized the Growing Evidence Demonstrating that Smoking Causes Significant Adverse Health Effects

594. Internal documents reveal that Defendants' knowledge of the potential harm caused by smoking was markedly different from their public denials on the same subject. Defendants specifically recognized the validity of the growing body of scientific evidence that existed in the 1950s.

595. At the same time that Defendants assured the public through their 1953 “Frank Statement” that “there is no proof that cigarette smoking is one of the causes [of cancer],” they documented a large number of known carcinogens contained in cigarette smoke.

605. Philip Morris also recognized the link between cigarette smoking and disease. A July 24, 1958 memorandum written by C. Mace, head of research for Philip Morris, admitted that Philip Morris was aware that smoking was linked to lung cancer. The memorandum stated that "the evidence ... is building up that heavy cigarette smoking contributes to lung cancer either alone or in association with physical and physiological factors."

c. In the 1950s, Defendants Began Their Joint Campaign to Falsely Deny and Distort the Existence of a Link Between Cigarette Smoking and Disease, Even Though Their Internal Documents Recognized Its Existence

610. Beginning in the 1950s, all Defendants, including TIRC, the Tobacco Institute and TIRC's successor, The Council for Tobacco Research-U.S.A., Inc. ("CTR"), issued numerous false public statements designed to mislead the public about the connection between cigarette smoking and disease.

612. On April 14, 1954, TIRC published "A Scientific Perspective on the Cigarette Controversy," which restated the Frank Statement's pronouncement that the Defendants had accepted "an interest in people's health as a basic responsibility, paramount to every other consideration in our business." A total of 205,000 copies were printed and sent to 176,800 doctors, general practitioners and specialists. It was also sent to the deans of medical and dental colleges. The book and an accompanying press release went to a press distribution of 15,000, including editors of daily and weekly newspapers, consumer magazines, veterans magazines, and medical and dental journals, news syndicate managers, business editors, editorial writers, science writers, radio and television commentators, news columnists, and Members of Congress. The Sunday New York Daily News (circulation 3,800,000) gave feature treatment to the booklet, devoting a major part of the page to comment and a cartoon. The story was also sent to some 1,400 radio stations.

613. In a July 1, 1954 statement by TIRC, Defendants promised not only to conduct research on the relationship between smoking and disease, but also to make their findings known to the public.

635. The Surgeon General's Report was released on January 11, 1964. Following the release of the Report, Defendants continued to assert alternative causation theories. Despite overwhelming evidence from a wide range of disciplines including statistics and epidemiology, pathology and chemistry, clinical observation, and animal experimentation, as well as their own internal research, Defendants continued to claim "no proof" and continued to attempt to create doubt about the scientific findings.

4. The 1964 Surgeon General Report Represented a Scientific Consensus that Smoking Causes Disease

a. The Process and Methodology of the Surgeon General's Report

642. In 1961, the Surgeon General created his Advisory Committee on Smoking and Health to perform a comprehensive evaluation of all the existing research regarding cigarettes and disease and offer a definitive assessment. The process of the Committee's formation, its selection, its substantive work, and its findings were designed to represent a model of objective, public scientific and medical inquiry based on a rigorous and systematic assessment of the health implications of smoking.

649. Beginning with the first Report in 1964, the United States Public Health Service has followed the scientific consensus formation approach when producing a Report of the Surgeon General on Smoking and Health. The scientific community forms a consensus on issues of causation by reviewing all of the scientific evidence available; examining that evidence for its strength, consistency, coherence, temporal association and biological plausibility; and then reaching a judgment as to whether the data support a causal relationship between smoking and a disease.

654. The 1964 Surgeon General's Advisory Committee's assessment of causality was based on a coherent and logical set of criteria, which have become the basic methodology for causal inference concerning disease since issuance of the Report.

b. The Conclusions

659. From both a clinical and a public health perspective, the 1964 Report concluded that stopping smoking lowered an individual's risk of disease and health:

> Cigarette smokers who had stopped smoking prior to enrollment in the study had mortality ratios about 1.4 as against 1.7 for current cigarette smokers. The mortality ratio of ex-cigarette smokers increased with the number of years of smoking and was higher for those who stopped after age 55 than for those who stopped at an earlier age.

660. The 1964 Surgeon General's Report on Smoking and Health is widely considered by historians to be one of the most significant documents in the history of twentieth century public health.

5. Post-1964 Research on the Adverse Health Effects of Smoking and Defendants' Persistent Denials Thereof

a. Following Publication of the 1964 Report, the Scientific Community Continued to Document the Link Between Smoking and an Extraordinary Number of Serious Health Consequences

663. The scientific conclusions presented in each of the Reports of the Surgeon General are based on the consensus of then-existing scientific understanding.

b. Defendants' Internal Documents and Research from the 1960s, 1970s, and Beyond Reveal Their Continued Recognition That Smoking Causes Serious Adverse Health Effects and Their Fear of the Impact of Such Knowledge on Litigation

664. By at least January 1964, with the issuance of the Surgeon General's 1964 Report, Defendants knew there was a consensus in the scientific community that smoking caused lung cancer and other diseases. Despite that fact, they publicly insisted that there was a scientific controversy and disputed scientific findings linking smoking and disease knowing their assertions were false.

665. Following issuance of the 1964 Surgeon General's Report, Helmut Wakeham, then Vice-President of Research and Development at Philip Morris Inc., admitted in a research report that there was "little basis for disputing the findings [of the 1964 Surgeon General's Report] at this time" and acknowledged that the Report reflected a "professional approach" of the Advisory Committee. However, Philip Morris continued to maintain - for another thirty-five years - its public position that the causal link between smoking and health was an "open question."

666. According to a February 1964 report prepared by Alan Rodgman at RJR, "Cigarette smoke from any tobacco type or tobacco blend contains carcinogenic components." The report also indicated that "[n]one of the chemical data acquired in our studies or in studies conducted elsewhere is inconsistent with reported biological, pathological, or statistical data indicting cigarette smoke as a health hazard."

671. A 1969 Phillip Morris memorandum revealed:

> A review of recent mouse skin painting data from the Harrogate Laboratories appearing in progress reports of the Tobacco Research Council (Great Britain) indicates strong support for previously published data on the following points: Cigaret smoke

> condensate painted on the backs of mice over a two-year period produces tumors in numbers proportionate to the amount of condensate applied. In other words, the dose-response relationship is clearly being followed in these experiments.

672. In the 1960s, RJR established a facility in Winston-Salem, North Carolina, which used mice to research the health effects of smoking. In this facility, nicknamed the "Mouse House," RJR scientists researched a number of specific areas, including studies of the actual mechanism whereby smoking causes emphysema. Internally, an RJR-commissioned report favorably described the Mouse House work as the most important of the smoking and health research efforts because it had come close to determining the underlying mechanism of emphysema.

673. Research done in RJR's science and health group located at the Mouse House was routinely withheld from the scientific community-scientists were forbidden to both discuss and publish their findings.

675. RJR knew that exposing rabbits to tobacco smoke led to: slowing of heartbeat during puffs, decrease in pulse pressure, increased number of goblet cells, alveolar collapse, erythema of nasopharynx, acute pulmonary edema, erythema, endocardial hemorrhage, kidney disease, bronchial hyperplasia, emphysema, epithelial hyperplasia, bronchial edema, bronchiolar plugs, and gross lesions on lungs. [Emphasis added].

679. Defendants also obtained evidence about the health effects of smoking that was contrary to their public statements from research they funded jointly. Dr. Gary Huber conducted smoking and health research funded by Defendants from 1972 to 1980 while working at Harvard University Medical School. Huber's research was conducted pursuant to a written agreement between Harvard and B & W, Liggett, Lorillard, RJR, and Philip Morris. The agreement created the Harvard Research Tobacco and Health Program, with Huber as its head and chief investigator.

688. When Huber was subpoenaed by the State of Texas to testify in its case against the Defendants in 1997, lawyers for Defendants, including Robert McDermott at Jones Day and Lee Stanford at Shook, Hardy & Bacon, contacted him and urged him "to keep the faith, to hold the line." The attorneys implied to Huber that he did not "fully appreciate the full weight of Shook, Hardy & Bacon and Jones Day" representatives of the tobacco industry. The calls caused Huber to fear for the safety and financial security of his family. Huber perceived a clear message: Defendants wanted to keep him silent.

c. Despite Their Internal Knowledge, Defendants Continued, From 1964 Onward, to Falsely Deny and Distort the Serious Health Effects of Smoking

706. Defendants responded to the 1964 Surgeon General's Report, which reflected the scientific consensus that smoking causes lung cancer with a campaign of proactive and reactive responses to scientific evidence that was designed to mislead the public about the health consequences of smoking. Defendants' goal was to create and maintain the smoking habit so as to enhance corporate profits.

707. In November 1967, at the direction of outside lawyers David Hardy of Shook, Hardy & Bacon, and Ed Jacobs of Cabell, Medinger, Forsyth & Decker, the Tiderock Corporation, the Tobacco Institute's public relations firm, prepared an action plan titled “The Cigarette Controversy.” The action plan proposed to influence public opinion by creating specific initiatives to re-open the “open question” cigarette controversy. The program called for the creation of a position paper for intra-industry use as well as one for distribution to the media and public. The plan included targeted categories for mailings such as the medical profession, scientists, communicators (press, radio, television), educators, top public figures, and 10,000 top corporate presidents. It also detailed the publication of magazine articles.

708. In 1968, the Tobacco Institute published a pamphlet titled “The Cigarette Controversy: An Examination of the Facts by the Tobacco Institute-The Tobacco Industry's Contribution to Health Research.’ It declared:

> In order to help advance scientific understanding of the causes, as well as the means of preventing and controlling disease, the American tobacco industry has contributed millions of dollars for independent research on smoking and health. During the past thirteen years, the industry has supported over 300 independent health studies through the industry's Council for Tobacco Research-U.S.A. Do cigarettes cause disease? In spite of all the debate-in spite of all of the research-that question is still unanswered. The industry will continue to seek the truth in the continuing cigarette controversy.

709. An April 23, 1968 publication of The Cigarette Controversy re-stated and reemphasized Defendants' views:

> Q: Has any important new evidence against cigarettes been reported in recent years?
>
> A: No. Cigarettes today are branded guilty on virtually the same kind of

> evidence that was considered insufficient only a few years ago.
>
> * * *
>
> Q: Is smoking a health hazard?
>
> A: That question is still an open one.
>
> * * *
>
> At that time [the early 1950s], most scientists considered the findings of these studies insufficient to prove a case against smoking. Since then, many other studies have been done. But there is still no proof that cigarette smoking is a cause of lung cancer-or any other disease.

713. In 1971, the Tobacco Institute published a shorter summary of the 1970 "Cigarette Controversy" pamphlet titled "Smoking/Health An Age-Old Controversy." This leaflet briefly stated Defendants' opinions on the questions of causation and the validity of the scientific research conducted to date. A November 9, 1973 Tobacco Institute memorandum described "Smoking/Health An Age-Old Controversy" as a "good synopsis of the [1970] pamphlet" and a "shorter version of the industry stand on the cigarette controversy" that should "be put to good use."

715. After the publication of "The Cigarette Controversy," the Tobacco Institute published a series of advertisements in various magazines, inviting readers to request copies of the pamphlet. For example, on November 6, 1972, the Tobacco Institute ran an advertisement in The Nation that stated "YOU HAVE A RIGHT TO A FULL DISCUSSION ABOUT smoking and health. The cigarette question is still a question. Send for free booklet, 'The Cigarette Controversy.'"

716. The Tobacco Institute published a 1974 version of "The Cigarette Controversy" and continued to argue that objective research was needed to explore questions about smoking and health. The Cigarette Controversy stated that a causal relationship between smokers and illness or death had not been established and that such claims were unproven. Over one million copies of the Cigarette Controversy, which was described as "the basic guide for other forms of communication," were in print by the end of the year.

721. All these activities, such as the Cigarette Controversy series ... and public statements of the industry were undertaken as part of a concerted, wide-ranging public relations strategy on the part of Defendants to mislead the public. A 1968 Tobacco Institute "Tobacco and Health Research Procedural Memo" lays out the basic strategy:

> The most important type of story is that which casts doubt on the cause and effect theory of disease and smoking.... [T]he headline should strongly call out the point-Controversy! Contradiction! Other factors! Unknowns!

726. At the same time, an internal B & W document titled "Smoking and Health Proposal" explained: "Doubt is our product since it is the best means of competing with the 'body of fact' that exists in the mind of the general public. It is also a means of establishing a controversy."

731. In March 1970, the Tobacco Institute approved television spots which said:

> Today, we in this industry support more impartial research on the vital question of tobacco and health than any agency of the Federal Government, and more than all the voluntary agencies combined. We have great confidence that the findings of this research will lead the way in providing fair and accurate information regarding cigarette smoking.
>
> * * *
>
> Do Smokers have common sense? We in the tobacco industry believe they do, and that millions of reasonable and responsible men and women who smoke will not be misled by the campaign of fear that is conducted against smoking. We believe that these emotional charges are no substitute for objective facts gathered from research.

735. Defendants' executives also continued to insist in the 1970s, as they had in the 1950s, that "if and when" any harmful elements were identified in cigarettes, they would take necessary steps to remove them. For example, on January 3, 1971, Joseph Cullman III, President of Philip Morris, explained in a "Face the Nation" television interview:

> [T]his industry can face the future with confidence because when, as, and if any ingredient in cigarette smoke is identified as being injurious to human health, we are confident that we can eliminate that ingredient.... We do not believe that cigarettes are hazardous; we don't accept that. But we are working with the government, working very hard with the government, on various methods of ascertaining whether or not cigarettes can be found to be hazardous.... I believe they have not been proved to be unsafe.

773. Sheldon Sommers, Scientific Director of CTR, testified before Congress in 1983 that "cigarette smoking has not been scientifically established to be a cause

of chronic diseases, such as cancer, cardiovascular disease, or emphysema."

778. RJR placed an ad in daily newspapers in 1984 titled, "Can we have an open debate about smoking?" In this ad, RJR claimed that "[s]tudies which conclude that smoking causes disease have regularly ignored significant evidence to the contrary," and that those "scientific findings come from research completely independent of the tobacco industry." It also states that "reasonable people who analyze it [the evidence] may come to see the issue not as a closed case, but as an open controversy."

779. That same year, 1984, the Tobacco Institute published a document titled "Cigarette Smoking and Chronic Obstructive Lung Diseases: The Major Gaps in Knowledge." It declared that Defendants did not agree with the conclusion of the Surgeon General's Reports that cigarette smoking had been established as a cause of chronic bronchitis and further asserted that a causal relationship between smoking and either chronic bronchitis or emphysema had not been established scientifically.

780. The Tobacco Institute published another report in 1984 titled "The Cigarette Controversy: Why More Research is Needed" as a formal statement of Defendants' position. It purported to review the testimony given at the 1982 and 1983 Congressional tobacco labeling hearings and stated:

> Thirty nine scientists presented testimony against proposals in the bills. Their evidence was based on their own published research or their review of scientific literature.
>
> Each of them in his or her own right is a recognized scientist, and most have reached eminence in their area of expertise.
>
> * * *
>
> The evidence presented by these men and women is summarized in the following pages. The scientists and their professional affiliations are listed in the Appendix. We publish this summary in the belief that the controversy about smoking must be resolved by scientific research and in the belief that informed discussion of the controversy is in the public interest.
>
> * * *
>
> Fifteen witnesses explained why they consider the hypothesis that cigarette smoking causes lung cancer to be unproven.

* * *

> Witnesses also questioned the assertion that cigarette smoking causes emphysema in particular and chronic obstructive lung disease (COPD) in general.

The report failed to disclose that most of these scientific witnesses were tobacco industry consultants who were receiving funding from the lawyers' Special Account No. 4.

793. When a company makes a statement about the carcinogens in its product, that has much more impact upon the consuming public than if some third party does.

794. When Philip Morris made statements about smoking and health, the company intended the public-including consumers and public health authorities-to rely on them.

795. When Brown & Williamson puts statements on its website, it intends that consumers should act in reliance upon the information contained in those statements.

6. As of 2005, Defendants Still Do Not Admit the Serious Health Effects of Smoking Which They Recognized Internally Decades Ago

796. More than forty years after Defendants issued the Frank Statement and created TIRC, Defendants' essential position on the relationship of smoking and health remains virtually unchanged. In April 1994, in the now-famous congressional hearings before the United States House of Representatives' Subcommittee on Heath and the Environment, Defendants' executives asserted yet again that the causal relationship of smoking and cancer had not been proven: the CEOs of Defendants B & W, Liggett, Lorillard, Philip Morris USA, and RJR publicly denied that smoking caused cancer.

805. In 1994, Philip Morris ran a paid newspaper statement about smoking, nicotine and addiction. It said: “Both smokers and nonsmokers deserve to know facts, not innuendo, about cigarettes.” The statement also said “Philip Morris does not believe cigarette smoking is addictive. People can and do quit smoking all the time.”

807. Bible stated in 2002 that he did not know if Philip Morris cigarettes had ever caused disease in any individual.

810. Finally, on October 13, 1999, when Philip Morris launched a corporate website, it changed its public position on smoking and health issues. The website stated: “There is an overwhelming medical and scientific consensus that cigarette smoking causes lung cancer, heart disease, emphysema, and other serious disease in smokers.” Steve Parrish, Senior Vice President of Corporate Affairs for Altria Group, acknowledged that the overwhelming scientific consensus referenced in the October 1999 statement had existed for decades. Parrish further conceded that Philip Morris's refusal to acknowledge prior to October 1999 that smoking caused disease had damaged the company's credibility because there was no support for Philip Morris's view outside of the tobacco industry.

812. Although Philip Morris is free to voluntarily change the information it includes on its cigarette warning labels, it has chosen not to change those labels even though in October 2000, the company changed its public position to admit that smoking causes disease and is addictive.

814. Speaking on behalf of RJR, Chairman Andrew Schindler, who received between $44 and $45 million in compensation in 2004, has refused to admit that smoking causes disease, as the following colloquies demonstrate: (1) When asked, “you won't say sitting here today that cigarette smoking causes disease, right?,” he responded: “Well, my testimony and what's on our Website today is cigarette smoking [has] inherent health risks [and] may contribute to causing certain diseases in some people.”; (2) when asked again, “So you say it's possible, it's likely, but you don't say it does, do I have that right?,” Mr. Schindler admitted, “Yes.”; (3) RJR's website, like its Chairman, does not admit that smoking is a cause of disease. Instead, it states: “We produce a product that has significant and inherent health risks for a number of serious diseases and may contribute to causing these diseases in some individuals.”
821. Two years after the effective date of the Master Settlement Agreement, in 2000, B & W told visitors to its website: “We know of no way to verify that smoking is a cause of any particular person's adverse health or why smoking may have adverse health effects on some people and not others.”

7. Conclusions

822. Defendants have been aware since the late 1950s of substantial evidence demonstrating that smoking causes significant adverse health effects, in particular, lung cancer. The evidence was presented by practicing physicians, such as Michael DeBakey, Alton Oschner, and Richard Overholt, by academic scientists, such as Evarts Graham and Ernst Wynder, and by government officials such as Surgeon General Leroy Burney in his 1959 JAMA article.

824. From at least 1953 until at least 2000, each and every one of these Defendants repeatedly, consistently, vigorously-and falsely-denied the existence of any adverse health effects from smoking. Moreover, they mounted a coordinated, well-financed, sophisticated public relations campaign to attack and distort the scientific evidence demonstrating the relationship between smoking and disease, claiming that the link between the two was still an "open question." Finally, in doing so, they ignored the massive documentation in their internal corporate files from their own scientists, executives, and public relations people that, as Philip Morris's Vice President of Research and Development, Helmut Wakeham, admitted, there was "little basis for disputing the findings [of the 1964 Surgeon General's Report] at this time."

826. For more than forty years after issuance of the Frank Statement in 1954, and for more than thirty years after issuance of the Surgeon General's first Report on smoking and health, Defendants maintained their position denying the causal relationship between smoking and disease. Finally, in 1999, Philip Morris launched a corporate website acknowledging the "overwhelming medical and scientific consensus that cigarette smoking causes lung cancer, heart disease, emphysema, and other serious disease in smokers." Despite this acknowledgment of the "overwhelming medical and scientific consensus," Philip Morris could not bring itself to clearly state its agreement with that consensus until October 2000. Philip Morris still does not include the information on its cigarette packaging that it agrees that smoking causes cancer and other diseases in smokers.

827. Neither RJR, Lorillard, nor B & W, have openly admitted that smoking causes cancer. Indeed, in 2000, two years after the effective date of the Master Settlement Agreement, B & W was putting the following message on its website: "We know of no way to verify that smoking is a cause of any particular person's adverse health or why smoking may have adverse health effects on some people and not others."

KESSLER'S Table of contents - PART V. B:

V. B. THE ADDICTIVE PROPERTIES OF NICOTINE

Plaintiff's First Amended Complaint, First Cause of Action - Negligence; Second Cause of Action - Strict Products Liability; Third Cause of Action - False Representation; Fourth Cause of Action - Deceit, Fraudulent Concealment; and, Sixth Cause of Action - Breach of Express Warranty

Kessler Finding of Fact Nos. 828 through 1117; 1134 through 1198; 1252; 1256 through 1365.

Exemplars of Relevant Findings of Fact:

1. Introduction

828. Cigarette smoking is an addictive behavior, characterized by drug craving, compulsive use, tolerance, withdrawal symptoms, and relapse after withdrawal. Underlying the smoking behavior and its remarkable intractability to cessation is the drug nicotine. Nicotine is the primary component of cigarettes that creates and sustains addiction to cigarettes. While the terminology of addiction has evolved over time, the underlying facts about the addictive nature of smoking and the centrality of nicotine to the addiction have been known and have not changed in over 40 years.

829. Since the 1950s, Defendants have researched and recognized, decades before the scientific community did, that nicotine is an addictive drug, that cigarette manufacturers are in the drug business, and that cigarettes are drug delivery devices. The physiological impact of nicotine explains in large part why people use tobacco products and find it so difficult to stop using them. Moreover, Defendants have sought to exploit the addictive quality of smoking and nicotine for decades in order to develop new products and increase sales.

830. Notwithstanding the understanding and acceptance of each Defendant that smoking and nicotine are addictive, Defendants have publicly denied and distorted the truth as to the addictive nature of their products for several decades. Defendants have publicly denied that nicotine is addictive, have suppressed research showing its addictiveness, and have repeatedly used misleading statistics as to the number of smokers who have quit voluntarily and without professional help.

831. Defendants have intentionally maintained and coordinated their position on addiction and nicotine as an important part of their overall efforts to influence public opinion and persuade people that smoking was not dangerous; in this way, the cigarette company Defendants could keep more smokers smoking, recruit more new smokers, and maintain or increase their earnings. Additionally, Defendants have sought to discredit evidence of addiction in order to preserve their “smoking is a free choice” argument in smoking and health litigation.

832. Defendants, with the exception of Philip Morris, continue to publicly deny and distort the truth as to the addictiveness of cigarette smoking and nicotine's role in the addiction. Defendants ignore their own internal statements acknowledging and exploiting nicotine addiction. While nicotine shares certain key attributes of heroin, cocaine, and other drugs, Defendants continue to assert that smoking is no more addictive than coffee, chocolate, and exercise, and (with

the exception of Philip Morris) continue to deny that nicotine is addictive at all.

2. Cigarette Smoking Is Addictive and Nicotine Is the Primary Element of That Addiction

a. How Nicotine Operates within the Body

833. When a person puffs a cigarette, she inhales cigarette smoke, which consists of an aerosol of particles and gases, including water, nicotine, and tar. Nicotine, a chemical found primarily in tobacco plants, has a structure similar to a chemical in the body called acetylcholine, a neurotransmitter which provides the pathway of communication from one nerve cell to another. Nicotine competes with and blocks the effects of acetylcholine in the body. When cigarette smoke is inhaled deeply into the lungs, nicotine particles impact the breathing tubes in the lungs and nicotine is rapidly absorbed into the blood stream. It then rapidly moves to the heart and from there through the arterial blood vessels to the rest of the body, including the brain. It takes about 15-20 seconds from the time a smoker puffs on a cigarette for its nicotine to enter the brain.

835. Nicotine binds to receptors that are intended to bind to the body's own neurotransmitter, acetylcholine. When nicotine binds to receptors, it artificially stimulates the acetylcholine system and causes the release of a number of hormones, including dopamine, norepinephrine, serotonin, and endorphins, which then affect mood and behavior. In addition, nicotine affects virtually every body organ. For example, nicotine increases the rate and force of heart contractions and constricts blood vessels.

836. Nicotine produces two different kinds of effects. First, there are certain primary effects of nicotine on the brain that smokers find desirable. For example, the first cigarette in the morning usually has a stimulating or alerting effect. Similarly, if a person is feeling stressed or anxious, nicotine may reduce that stress or relieve that anxiety and make a person feel better. Smokers may, however, develop tolerance to many of these primary effects. As occurs with the use of all psychoactive drugs, the brain attempts to adapt to the persistent presence of nicotine. This adaptation, or tolerance, produces actual changes in the brain's structure. Over time, the brain becomes tolerant to the effects of nicotine and needs even greater amounts of it to produce the same effects on hormones as it once did before the development of tolerance.

837. Second, because the smoker's brain has adapted to the constant presence of nicotine, it becomes dependent on nicotine to function normally. When a smoker doesn't have nicotine, the brain functions abnormally and most people,

approximately 80%, experience withdrawal symptoms. Those symptoms, which are the very opposite of the primary effects of nicotine, include irritability, lethargy, restlessness, sleeplessness, anxiety, depression, hunger, and weight gain. Withdrawal symptoms begin to occur as soon as nicotine levels in the body start to decline. When a person is experiencing nicotine withdrawal symptoms, ingestion of nicotine reverses the effects. This reversal of unpleasant withdrawal effects is perceived by the smoker as having beneficial effects on mood and arousal. Thus, as tolerance develops, the smoker gets fewer pharmacological benefits from each cigarette and smokes more and more to avoid withdrawal symptoms.

838. In commonly understood terms, smokers become dependent on the significant pharmacological and psychoactive effects of the nicotine in cigarettes, resulting in craving, compulsive use, difficulty in quitting, and relapse after withdrawal.

839. There is compelling evidence that smoking behavior is motivated by a need to maintain a preferred dose or level of nicotine intake, leading to the phenomenon of nicotine compensation, or titration, in response to the use of cigarettes with lower nicotine yields. Although it may be correct that addiction to smoking is, in part, an addiction to a set of behaviors, i.e., opening a pack, taking out a cigarette, lighting up, tapping ashes, etc., the fact is that nicotine is the essential ingredient which creates and maintains the addiction. To give a simplistic example, denicotized cigarettes have attracted virtually no smokers even though the behaviors involved are the same.

840. This understanding supports the now overwhelming consensus in the scientific and medical community that cigarette smoking is an addictive behavior and that nicotine is the component in cigarettes that causes and sustains the addiction. However, it has taken over 50 years for this full understanding of nicotine's role and addictiveness to evolve.

b. Evolving Definitions of “Addiction” and Classification of Nicotine

841. In the last fifty years, as the scientific, regulatory, and public health communities have developed greater understanding of drug use, they have adopted a more nuanced definition of what constitutes an addiction to drugs. As the definition of addiction evolved, so did the classification of nicotine.

855. The 1988 SG Report demonstrated that nicotine in cigarettes meets the same criteria for addiction that apply to heroin, morphine, and cocaine and that the pharmacological and behavioral processes that determine tobacco addiction are similar to those that determine addiction to drugs such as heroin and cocaine.

The Report specifically found that nicotine, heroin, morphine, and cocaine all met the criteria for addiction.

861. In the DSM-IV section titled "Nicotine-Related Disorders," the APA concluded that nicotine can produce dependence in people who use all forms of tobacco, including pipes, chewing tobacco, or cigarettes, because the following criteria are present: tolerance, withdrawal, a desire to quit, a great deal of time spent using nicotine, and the continued use despite medical problems.

863. The DSM-IV authors specifically rejected Defendants' oft-repeated public claim that smoking cigarettes does not produce withdrawal and therefore is not addictive: "Cessation of nicotine use produces a well-defined withdrawal syndrome that is described below. Many individuals who use nicotine take nicotine to relieve or avoid withdrawal symptoms when they wake up in the morning or after being in a situation where use is restricted." In addition, withdrawal symptoms "are typically more intense among individuals who smoke cigarettes than among individuals who use other nicotine-containing products."

867. As the documentary evidence laid out in great detail *infra* shows, over the last forty years, Defendants have been no stranger to the term "addiction" in reference to smoking. In-house tobacco industry research, research not disclosed to the 1964 Surgeon General's Advisory Committee, showed drug addiction-like effects, including tolerance, withdrawal, compulsive use, and craving. The actions of BATCo and B & W, described below, are particularly illuminating on the issue of how far superior the cigarette company Defendants' knowledge of nicotine and its behavioral and pharmacological effects was by 1964, compared to the relatively uninformed conclusion of the Advisory Committee to the Surgeon General who lacked that knowledge and its supporting research. See extended discussion at Section V(B)(3)(c-d), *infra.*

c. Consequences of the Addictiveness of Nicotine

868. Today, most daily cigarette smokers satisfy the Surgeon General's primary criteria for addiction. First, as to highly controlled or compulsive use, addicted smokers smoke numerous cigarettes-often at least one pack or 20 cigarettes-throughout the day. Second, the nicotine in the cigarette tobacco stimulates the nicotinic receptors in the smoker's brain, producing a psychoactive reaction that affects the smoker's mood. Third, the smoking behavior is reinforced by the pleasurable effects of nicotine and/or by the mitigation of unpleasant withdrawal sensations triggered by the need for nicotine.

869. Published research indicates that 77% to 92% of smokers are addicted to nicotine in cigarettes.

870. Many smokers and potential smokers are unaware of or do not fully appreciate the addictive nature of nicotine, the addictiveness of cigarette smoking, and the extent to which nicotine delivery and dosage are highly controlled and engineered.

871. Every year, an estimated seventeen million people in the United States attempt to quit smoking. Fewer than one and a half million, or 8%, succeed in quitting permanently.

874. Most smokers become addicted to smoking as teenagers. 88% of daily smokers tried their first cigarette before reaching age eighteen, and 70% of people who have ever smoked daily began smoking daily before they were eighteen years old. Because the addiction to nicotine develops in the first few years of cigarette smoking, most smokers become addicted to nicotine during adolescence or early adulthood.

d. Conclusion

880. As the public health community's understanding of nicotine's pharmacological and behavioral effects on the human body has evolved, so has the terminology used to describe nicotine. The scientific and medical community has struggled with the choice of the proper nomenclature to describe the human affinity for nicotine and has moved from “habituation” to “dependence” to “addiction.” Since the mid-1980s, the scientific and medical community has viewed the terms “dependence” and “addiction” as virtually synonymous. In fact, many public health organizations, including NIDA, the American Association of Addiction Medicine, and the College on Problems of Drug Dependence, use the terms “drug addiction” and “drug dependence” interchangeably.

3. Defendants Were Well Aware that Smoking and Nicotine Are Addictive

882. The wealth of documentary evidence examined in this Section, as well as Sections V(C) and (D), reveals that for decades Defendants knew and internally acknowledged that nicotine is an addictive drug, that cigarettes are a nicotine delivery device, and that addiction can be enhanced and perpetuated through manipulating both the amount of nicotine and the method of nicotine delivery. Much of Defendants' knowledge of nicotine was obtained from in-house and industry-funded research into the pharmacological effects of the drug.

883. For example, internal documents reveal that Philip Morris researchers knew in 1969 that nicotine was "a powerful pharmacological agent" and that the company operated on the "premise that the primary motivation for smoking is to obtain the pharmacological effect of nicotine." RJR's lead nicotine researcher stated in 1972 that nicotine is the "sine qua non of smoking" and that the industry was based on the sale of "attractive dosage forms of nicotine." BATCo's sophisticated research from the early 1960s demonstrated that "smokers are nicotine addicts." B & W, BATCo's American subsidiary, possessed the BATCo data and marketed cigarettes with the understanding that they "must provide the appropriate levels of nicotine." Lorillard researchers accepted the scientific consensus in the 1970s that "the most probable reason for the addictive properties of the smoke is the nicotine." Liggett, like its larger cigarette manufacturer counterparts, was actively seeking ways to manipulate the nicotine delivery to smokers.

884. Defendants have studied nicotine and its effects since the 1950s. The documents describing their research into and resulting knowledge of nicotine's pharmacological effects on smokers-whether they characterized that effect as "addictive," "dependence" producing or "habituating,"-demonstrate unequivocally that Defendants understood the central role nicotine plays in keeping smokers smoking, and thus its critical importance to the success of their industry.

887. These industry documents also support the conclusion that Defendants knew early on in their research that if a cigarette did not deliver a certain amount of nicotine, new smokers would not become addicted, and "confirmed" smokers would be able to quit.

888. The evidence set forth in this Section demonstrates the extensive knowledge Defendants have had since the 1950s about nicotine's addictive effects on smokers, their use of that knowledge to maintain and increase the sale of cigarettes, and their decades-long efforts both to deny the truth about the addictive nature of nicotine and to conceal their own internal research which generated that information.

a. Philip Morris, see findings 889 through 946

b. R.J. Reynolds, see findings 960 through 986

c. BATCo, see findings 988 through 1079

d. Brown & Williamson, see findings 1081 through 1117

f. American Tobacco Company, see findings 1134 through 1136

g. CTR, see findings 1138 through 1145

4. Defendants Publicly Denied that Nicotine Is Addictive and Continue to Do So

1146. Despite the extensive and detailed knowledge possessed by Defendants for decades about the addictive qualities of nicotine and smoking, Defendants have publicly made false and misleading denials of the addictiveness of smoking, as well as nicotine's role in causing that addiction, and have suppressed the research results and data they produced and possessed contradicting such denials.

1147. As acknowledged by industry counsel Covington & Burling, in a once-confidential May 1988 summary, “Tobacco industry statements deal only sparsely with the issue of addiction. To the extent such statements exist they generally deny outright any addictive effect.”

1148. Defendants' statements denying addiction, as described in the May 1988 Covington & Burling memorandum, as well as the many other similar denials of smoking and nicotine addiction set forth, *infra.*, were used to convey four important themes to the public:

> 1. Smoking cigarettes is not addictive because some smokers can, and have, quit smoking on their own;
>
> 2. Smoking cigarettes is not addictive because it does not produce physical “dependence”;
>
> 3. Smoking cigarettes is not addictive because it does not produce “intoxication”; and
>
> 4. Smoking cigarettes is not addictive because cigarettes are not like other addictive drugs, i.e., they are not illegal and are not necessarily linked to an anti-social lifestyle; smoking cigarettes is merely a pleasurable “habit” like playing tennis, jogging, eating chocolate, listening to rock music, etc.

These statements are detailed below.

a. Philip Morris

1149. Philip Morris Chairman James C. Bowling denied that cigarette smoking was an addiction in a July 18, 1973 “60 Minutes” interview. Instead, Bowling compared the choice to stop smoking to the choice to eat eggs or not.

1152. In a 1994 published statement in the New York Times, Philip Morris asserted that it “does not believe cigarette smoking is addictive.”

1153. On April 14, 1994, the President and Chief Executive Officer of Philip Morris, William I. Campbell, testified under penalty of perjury in a nationally televised hearing before the House of Representatives Subcommittee on Health and the Environment. During this hearing, Campbell affirmatively denied that nicotine is addictive:

> Rep. Ron Wyden: Let me ask you.... Do you believe that nicotine is not addictive?
>
> Mr. Campbell: I believe nicotine is not addictive, yes.

1159. In Philip Morris's January 2, 1996 written submission in opposition to the FDA's assertion of jurisdiction over tobacco products, the company denied that it knew nicotine was addictive, denied that its documents showed that nicotine was addictive, and denied that smokers smoke to obtain nicotine.

1163. In January 1998, Geoffrey Bible, CEO of Philip Morris Companies, submitted testimony that stated in part:

> We recognize that nicotine, as found in cigarette smoke, has mild pharmacological effects, and that, under some definitions, cigarette smoking is “addictive.” The word “addiction” has been and is currently used differently by different people in different contexts, and the definition of the term has undergone significant changes over the past several decades. In 1964, for example, the Advisory Committee to the Surgeon General of the United States concluded that smoking, although “habit forming,” did not fit within its definition of “addiction.” However, in 1988, the Surgeon General redefined the term, and concluded that smoking is “addictive.” We have not embraced those definitions of “addiction” which do not include such historically accepted and objective criterion, such as intoxication and physical withdrawal, as important markers.
>
> Bible admitted that Philip Morris Companies' position was “at odds ... with the public health community,” and said that for the sake of a consistent public health message, Philip Morris Companies would no

> longer debate the addictiveness of nicotine except insofar as it was "necessary to defend ourselves and our opinions in the courts."

1164. As late as 2002, Philip Morris was admitting only that smoking, not nicotine, met the "physiological definition of addictiveness." Philip Morris's admission was premised on a broad definition of "addiction" to include anything that is habit-forming.

1165. As of 2005, Philip Morris USA's website states that it now "agrees with the overwhelming medical scientific consensus that cigarette smoking is addictive."

b. R.J. Reynolds

1166. At hearings before a Congressional Subcommittee from March 5 through March 12, 1982, RJR Chairman and CEO Edward Horrigan stated under oath that "with regard to addiction, there is absolutely no proof that cigarettes are addictive." At the time of this statement, Horrigan was also chairman of the Tobacco Institute executive committee.

1170. Counsel for RJR prepared an anticipated "Q & A" for company Chairman and CEO James Johnston dated April 6, 1994, which said that nicotine was "not addictive," and that the term "addiction" was misused in the context of cigarette smoking.

1171. On April 14, 1994, Johnston testified under penalty of perjury in a nationally-televised hearing before the House of Representatives Subcommittee on Health and the Environment. During this hearing, Johnston affirmatively denied that nicotine is addictive:

> Rep. Ron Wyden: Let me ask you.... Do you believe that nicotine is not addictive?
>
> Mr. Johnston: Congressman, cigarettes and nicotine clearly do not meet the classic definitions of addiction. There is no intoxication.

1176. In a proxy statement filed with the Securities and Exchange Commission ("SEC") on April 12, 1995, the Board of Directors of RJR Nabisco Holdings Corporation publicly stated: A group of shareholders filed a proposal to the Board that the company issue a public report regarding "whether nicotine content in and absorption from its tobacco products are deliberately controlled by the [c]ompany and if the reasons for any such control include the delivery of a reliable dose of nicotine to and/or the promotion of nicotine absorption by the

customer." In recommending a vote against the proposal, the Board argued, "In RJRT's opinion, cigarette smoking does not meet the classic definitions of 'addiction,' and the forty-five million Americans who smoke are not 'addicts.' To call nicotine 'addictive' is to ignore significant differences between cigarettes and truly addictive drugs." The Board repeated these opinions in a proxy statement filed with the SEC in 1996, adding, "there is no accurate evidence establishing that any specific yield of nicotine causes 'addiction.' "

1178. Along with Philip Morris, B & W, Lorillard, and the Tobacco Institute, RJR filed a joint submission on January 2, 1996, opposing FDA's assertion of jurisdiction over cigarettes. In its public statement on the FDA submission, RJR stated that, "Under scientifically verifiable criteria, nicotine and cigarette smoking are not addictive."

1182. In a May 2002 RJR document titled "Guiding Principles," the company stated its position regarding addiction in a section called "Quitting and Addiction." In this section, the company again demonstrated the cigarette industry's refusal to make an unqualified admission that cigarette smoking is addictive: "Many people believe that smoking is addictive, and as that term is commonly used today, it is. Many smokers find it difficult to quit and some find it extremely difficult." RJR later added that "[h]owever, we disagree with characterizing smoking as being addictive in the same sense as heroin, cocaine or similar substances." In addition, there was no mention of RJR's knowledge of the role of nicotine in maintaining addiction to smoking.

d. American Tobacco Company

1193. On April 14, 1994, the Chief Executive Officer of American, Donald S. Johnston, testified under penalty of perjury in a nationally televised hearing before the House Subcommittee on Health and the Environment. During this hearing, Johnston denied that nicotine is addictive:

> Rep. Ron Wyden: Let me ask you.... Do you believe that nicotine is not addictive?
>
> Mr. Johnston: And I too, believe that nicotine is not addictive.

e. Brown & Williamson

1194. While B & W knew internally that smokers were addicts who smoked for nicotine, the company understood that the industry's "free choice" argument in litigation would be undermined by any suggestion that smoking and nicotine were addictive. In the words of long-time general counsel Ernest Pepples, in a

February 14, 1973 “Confidential” memorandum to public relations director John Ballock, one of the “salient problems now facing the cigarette industry” was:

> ADDICTION-Some emphasis is now being placed on the habit forming capacities of cigarette smoke. To some extent the argument revolving around “free choice” is being negated on the grounds of addiction. The threat is that this argument will increase significantly and lead to further restrictions on product specifications and greater danger in litigation.

1195. On April 14, 1994, the Chairman and Chief Executive Officer of B & W, Thomas Sandefur, also testified under penalty of perjury in a nationally televised hearing before the House Subcommittee on Health and the Environment. At this hearing, Sandefur, consistent with his fellow CEOs, denied that nicotine is addictive:

> Rep. Ron Wyden: Let me ask you.... Do you believe that nicotine is not addictive?
>
> Mr. Sandefur: I believe nicotine is not addictive.

1198. In 1999, B & W posted on its website a document called “Hot Topics: Smoking and Health Issues.” While this document did admit that “by some definitions, including that of the Surgeon General in 1988, cigarette smoking would be classified as addictive,” it went on to state that:

> Brown & Williamson believes that the relevant issue should not be how or whether one chooses to define cigarette smoking as addictive based on an analysis of all definitions available. Rather, the issue should be whether consumers are aware that smoking may be difficult to quit (which they are) and whether there is anything in cigarette smoke that impairs smokers from reaching and implementing a decision to quit (which we believe there is not.)

h. Tobacco Institute

1207. The Tobacco Institute was by far the Defendants' most vocal spokesperson in the industry's campaign to deny addiction and conceal internal research and knowledge. Over the decades, the Tobacco Institute, on behalf of the cigarette company Defendants, publicly disseminated countless false, deceptive, or misleading statements denying the addictiveness of nicotine and cigarette smoking. The following instances exemplify the many statements made by TI employees in the organization's attempts to deceive and mislead the American public about smoking, the role nicotine played in smoking, why quitting was so

difficult, and whether people who could not quit smoking merely lacked will-power.

1208. When the Director of NIDA, Dr. William Pollin, testified before the Senate Committee on Labor and Human Resources in 1982 that the agency had concluded that nicotine met all the standard criteria used by NIDA, the Drug Enforcement Administration ("DEA"), the FDA, and the WHO, to define a dependence-producing drug, Defendants did not come forward with their internal research, as detailed in the preceding Section, supporting NIDA's conclusion. Instead, Defendants, through the Tobacco Institute and outside counsel, sent representatives and paid researchers to testify that NIDA was wrong and that nicotine did not cause addiction or dependence.

1210. On March 12, 1982, the Tobacco Institute's William D. Toohey issued a press release summarizing the tobacco company-funded testimony of Blau before a Congressional Subcommittee. According to the release, Blau criticized the characterization of smoking as addictive, claiming that he placed the "attachment" to smoking in the same category as "tennis, jogging, candy, rock music, Coca-cola, members of the opposite sex and hamburgers." The press release went on to claim that "removal of these activities, persons or objects can cause sleeplessness, irritation, depression and other uncomfortable symptoms, similar to those felt by some with abstinence from tobacco."

1211. The March 1982 Tobacco Institute press release failed to state that Blau was paid by the cigarette company Defendants to testify and that he was a member of, in Tobacco Institute President Sam Chilcote's words, the "Tobacco Institute Team." Instead, the press release indicated only that Blau was a "Florida psychologist," leaving the false impression that he had no ties to the tobacco industry.

1219. The Tobacco Institute also denied that smoking and nicotine are addictive in its submissions and testimony leading up to the 1988 Surgeon General's Report

1222. In a July 29, 1988 press release, the Tobacco Institute stated that the Surgeon General's declaration that smoking is an addiction was "[a]n escalation of anti smoking rhetoric ... without medical or scientific foundation."

1227. The Tobacco Institute published a brochure in March 1989 titled "The Anti-Smoking Campaign: Enough is Enough." In this document, the Tobacco Institute denied that smoking is addictive, emphasizing that: "The fact is that there is nothing about smoking, or about the nicotine in cigarettes, that would prevent smokers from quitting.... If a smoker wants to quit, it may take will

power, but that's all it takes."

1239. In this litigation, Ms. Dawson testified that the Tobacco Institute's public position was that smoking and nicotine were not addictive and that this position remained unchanged over the years.

1240. Dawson, on behalf of the Tobacco Institute, also admitted that there was no scientific basis for the public statements denying the addictiveness of nicotine, and that the cigarette manufacturer Defendants never provided the Tobacco Institute with information that nicotine was a drug with a variety of physiological effects and was thought to be responsible for the addictive properties of cigarette smoking.

i. CTR

1243. Sheldon Sommers, Research Director of CTR and member of CTR's Scientific Advisory Board, told a Congressional subcommittee in hearings held in April 1969 that "smoking tobacco is not considered an addiction."

1245. Statements such as these were misleading and are contradicted by decades of scientific research conducted by or funded by Defendants, and by a myriad of internal statements by company representatives.

j. Defendants' Conduct Continues

1246. Even today, although certain Defendants have acknowledged, to varying degrees, the overwhelming evidence that smoking is addictive, no Defendant accepts the Surgeon General's definition of addiction, no Defendant admits that nicotine is the drug delivered by cigarettes that creates and sustains addiction, and no Defendant acknowledges that the reason quitting smoking is so difficult, and not simply a function of individual will power, is because of its addictive nature.

1250. On its current website, B & W recites its new public position that it "agrees that, by current definitions of the term 'addiction,' including that of the Surgeon General in 1988, cigarette smoking is addictive." Two paragraphs down from this, however, B & W reverts to its former denials, omitting any reference to nicotine and stating the following:

> Although smoking can be very difficult to quit, we do not believe that the term "addiction" should be used to imply that there is anything in cigarette smoke that prevents smokers from reaching and implementing a decision to quit. Smoking may indeed be difficult to quit, but people can quit and do so in large numbers. The scientific literature demonstrates that smokers who believe they can quit, and who believe that the benefits of quitting outweigh

the enjoyment of continuing to smoke, can do so.

1262. While Philip Morris told people that it agrees that cigarette smoking is addictive, it has not told the public that it agrees that it is the nicotine delivered in cigarette smoking that is addictive. Ms. Keane, Philip Morris' general counsel, admitted this was material information that the public should possess.

5. Defendants Concealed and Suppressed Research Data and Other Evidence that Nicotine Is Addictive

1266. As demonstrated, Defendants' internal documents reflect a sophisticated understanding of nicotine and its role in creating smoking addiction-an understanding that is totally inconsistent with their long-standing public denials that nicotine is addictive. In addition, it is clear that Defendants intentionally withheld from public dissemination, from the public health community, and from government authorities, accurate and important information regarding the addictiveness of nicotine in cigarettes.

1267. Defendants suppressed their own extensive research findings discussed in Section V(B)(3), *supra*, supporting the conclusion that nicotine is addictive, and fostered controversy about the extent of scientific knowledge concerning nicotine and its addictive effects that was publicly available.

1268. As that evidence shows, Defendants themselves possessed, from their own in-house and external research, information that led them to conclude, long before public health bodies did, that the primary reason people keep smoking cigarettes is to obtain the drug nicotine, which is addictive. Defendants intentionally withheld this data (including many of studies on the physiological effects of nicotine in animals and humans, and much of their research on the determinants of nicotine dosing in cigarettes) when there were major public efforts to review and synthesize all available information. This occurred with the preparation of both the 1964 and 1985 Surgeon General's Reports and numerous congressional investigations. Defendants also engaged in a decades-long, elaborate, sophisticated, well-funded public relations offensive, denying and attacking the consensus conclusion they had long ago reached internally, but that the less well-funded public health community was belatedly reaching, that smoking is addictive primarily because cigarettes effectively deliver nicotine. *See also* 490010042-0044 at 0043 (U.S. 79285) (presenting “Addiction Statement,” prepared by Shook, Hardy & Bacon, deciding the company's position must be that smoking is not addictive and that, “Statements in company documents cannot refute this conclusion.”).

1269. A September 9, 1980 Tobacco Institute internal memorandum revealed the recognition by the member companies that a public admission that nicotine was

addictive would undermine their litigation defense that a person's decision to smoke is a "free choice":

> [T]he entire matter of addiction is the most potent weapon a prosecuting attorney could have in a lung cancer/cigarette case. We can't defend continued smoking as "free choice" if the person was "addicted."

1270. A second reason Defendants denied addiction was to avoid regulation by the FDA. None of the companies' internal research and evidence about addiction was submitted in 1996 when the FDA sought to assert jurisdiction over cigarettes as drug (nicotine) delivery devices. Instead, Defendants vigorously denied every aspect of addiction.

6. Conclusions

1359. For approximately forty years, Defendants publicly, vehemently, and repeatedly denied the addictiveness of smoking and nicotine's central role in smoking. They made these denials out of fear that public acknowledgment of what was so well documented and widely accepted internally within their corporate offices and scientific laboratories could result in governmental (i.e., FDA) regulation, adverse liability judgments from addicted smokers suffering the adverse health effects of smoking, loss of social acceptability of smoking, and the ultimate loss of corporate profits. The evidence spelled out above is simply overwhelming that Defendants knew that smoking is addictive and knew that nicotine is the agent creating and sustaining that addiction. There is also overwhelming evidence that even though Defendants have known internally about addiction for decades, they have endeavored to keep the extensive research and data they had accumulated out of the public domain and out of the hands of the public health community by denying that such data existed, by refusing to disclose it, and by shutting down or censoring laboratories and research projects which were investigating the mechanisms of nicotine.

1360. Defendants assert that the public health community and the public itself has known for decades that nicotine produced dependence. For example, Defendants cite to the 1962 publication of the well respected Larson, Haag and Silvette compendium, Tobacco Experimental and Clinical Studies, which described nicotine's effects on the human nervous system and summarized existing research suggesting that people smoke to obtain nicotine, that nicotine has pharmacological effects, and that nicotine is addictive or habituating. Defendants also cite to the United States Supreme Court comment that, when Congress enacted the Federal Cigarette Labeling Act in 1965, "the adverse health consequences of tobacco were well known, as were nicotine's pharmacological effects." *Food and Drug Admin. v. Brown & Williamson*

Tobacco Corp., 529 U.S. 120, 138, 120 S.Ct. 1291, 146 L.Ed.2d 121 (2000). Even if there is truth to Defendants' speculation that "everyone knew" of nicotine's addictiveness, there is no question that the public health community lacked the substantial and sophisticated understanding of nicotine's effects and role that Defendants possessed. Put quite simply, if the Surgeon General of the United States possessed the information and data Defendants possessed prior to publication of his 1964 Report, it is simply not possible that he would have ignored it.

1361. Moreover, there is a basic inconsistency in Defendants' position. If, in fact, "everybody knew" that smoking and nicotine were addictive, then why were Defendants publicly, vehemently, and repeatedly denying it?

1362. Defendants' denials misled the public about why quitting smoking is so difficult, exactly how difficult it is, and about why failure to quit is not simply a function of personal weakness or lack of willpower. In short, after reassuring the smoker that smoking was not bad for her health, and was not addictive, Defendants then blamed her for being unable to stop using the product they had so successfully marketed with false information.

1363. Defendants did not simply deny that smoking warranted the label "addiction"; they denied the entire concept of physiological dependence. The semantic battle Defendants have waged in the public realm and at trial is a distraction from the fact that, whether using the word "dependence" or "addiction," the core concept is the compulsive and uncontrollable use of nicotine reflected in drug-seeking and drug-taking behavior, all of which Defendants deny exist.

1364. Based on the extensive individual Findings of Fact set forth in this Section, the Court finds that Defendants have known for decades that cigarette smoking was addictive, and that nicotine is the addicting element in smoking behavior. Defendants' false and misleading statements relating to addiction continue even today.

1365. Moreover, Defendants deliberately and intentionally hid this information from the public and closed down research laboratories and on-going projects in order to ensure secrecy. Time and time again, Defendants falsely denied these facts to smokers and potential smokers, to government regulatory authorities, to the public health community and to the American public.

KESSLER'S Table of contents - PART V.C:

V. C. Nicotine "Manipulation": Defendants Have Falsely Denied That They

Can and Do Control the Level of Nicotine Delivered In Order to Create and Sustain Addiction

Plaintiff's First Amended Complaint ¶¶ First Cause of Action - Negligence; Second Cause of Action - Strict Products Liability; Third Cause of Action - False Representation; Fourth Cause of Action - Deceit, Fraudulent Concealment; and, Kessler Table of contents Sixth Cause of Action - Breach of Express Warranty

Kessler Finding of Fact Nos. 1366 through 1377; 1379 through 1399; 1403 through 1472; 1493 through 1503; 1508 through1679; 1696 through 1702; 1705 through 1722; and 1730 through 1763.

Exemplars of Relevant Findings of Fact:

1366. As demonstrated in the previous Section, Defendants have long known that nicotine creates and sustains an addiction to smoking and that cigarette sales, and ultimately tobacco company profits, depend on creating and sustaining that addiction. Section V(B)(3), *supra*. Given the importance of nicotine to the ultimate financial health of Defendants, they have undertaken extensive research into how nicotine operates within the human body and how the physical and chemical design parameters of cigarettes influence the delivery of nicotine to smokers. Using the knowledge produced by that research, Defendants have designed their cigarettes to precisely control nicotine delivery levels and provide doses of nicotine sufficient to create and sustain addiction. At the same time, Defendants have concealed much of their nicotine-related research, and have continuously and vigorously denied their efforts to control nicotine levels and delivery.

1367. Defendants, individually, jointly, and through third parties, have extensively studied smoking intake and inhalation, compensation, addiction physiology, smoker psychology, the pharmacological aspects of nicotine, the effects of nicotine on brain waves, and related subjects. As a result of this research, cigarette company Defendants have been aware for decades that cigarettes are addictive and that smoking addiction is caused primarily by the delivery of dependence-producing levels of nicotine.

1368. The typical cigarette contains far more nicotine than an individual will inhale as he or she smokes. Every aspect of a cigarette is precisely tailored to ensure that a cigarette smoker can pick up virtually any cigarette on the market and obtain an addictive dose of nicotine. Most cigarettes are manufactured using reconstituted tobacco material, additives, burn accelerants, ash conditioners, and buffering substances, all of which affect nicotine levels and

delivery. Other cigarette design features used by Defendants to control nicotine delivery include filter design, paper selection and perforation, ventilation holes, leaf blending, and use of additives (such as ammonia) to control the PH of cigarette smoke.

1369. During the 1960s and 1970s, the public health community urged development of low-tar cigarettes as a healthier alternative to the "full-flavored" cigarettes which then dominated the market. In response, cigarette company Defendants developed low-tar cigarettes. They then falsely maintained that nicotine levels were inextricably linked to tar levels, and that nicotine levels would, of necessity, proportionately fall, as fast and as far as the tar levels in the newer low-tar cigarettes.

1370. In the early 1970s, the Federal Trade Commission developed a machine to measure tar and nicotine levels. Even though it became the accepted mechanism for taking such measurements, it became widely known in both the public health community and by the cigarette company Defendants that the FTC method did not accurately measure the amounts of nicotine and tar which a smoker actually ingested. Cigarette company Defendants, with the benefit of their much more sophisticated understanding of smoker compensation, as well as their knowledge of nicotine control, then intentionally developed and marketed cigarettes which, in actuality, delivered higher levels of nicotine than those measured by the FTC method. Those levels of nicotine were sufficient to create and sustain addiction in smokers.

1. For Decades, Defendants Have Recognized that Controlling Nicotine Delivery, in Order to Create and Sustain Smokers' Addiction, Was Necessary to Ensure Commercial Success

a. Defendants Recognized the Need to Determine "Minimum" and "Optimum" Nicotine Delivery Levels in Order to Provide Sufficient "Impact" and "Satisfaction" to Cigarette Smokers

1371. During years of research, cigarette company Defendants sought to identify what they often referred to as an "optimum" amount of nicotine: one that would meet smokers' demand for lower nicotine and tar products, while still providing enough nicotine to create and sustain addiction. Defendants' efforts often centered on attempting to identify a particular dose of nicotine that would "satisfy" smokers' need for nicotine and thereby assure continued smoking.

1372. As Defendants' knowledge and understanding of nicotine delivery evolved, they identified and developed more sophisticated product design techniques that would assure the delivery of the minimum dose of nicotine to

provide smokers with sufficient “impact” and “satisfaction,” regardless of the type of cigarette.

1373. Defendants' internal documents demonstrate that, based on their knowledge of nicotine's pharmacological properties and addictive nature, they incorporated physical and chemical design techniques into their commercial products that would assure delivery of the precise levels of nicotine necessary to assure taste, impact, and satisfaction, i.e., to maintain addiction.

1374. In their research reports, studies, and memoranda, Defendants used different terms to describe or identify the attributes of nicotine which were so desirable to smokers. Those terms include the words “impact,” “satisfaction,” “hit,” “optimum,” “optimal,” and “minimum.” These terms were not used in a uniform or consistent manner, and were often used interchangeably.

1375. Based on thorough examination of the many documents discussed in this Section, and the context in which the terms in issue were used, the Court finds that, in most instances, the word “impact” has been used by Defendants to refer to the immediate sensory effect that the delivery of nicotine has on a smoker. This sensory response occurs through nicotine's stimulation of the afferent nerves in the back of the throat when cigarette smoke is first inhaled, causing a peripheral nerve effect that is recognized by the brain.

1376. Defendants' internal documents indicate that they were well aware that impact was significant to smokers, and that a particular cigarette's impact was a function of its nicotine delivery. For example, B & W defined impact to mean “[t]he sensory attribute most associated with nicotine,” noting that “[t]he higher the nicotine delivery per puff of a product the higher the Impact felt by the inhaling smoker.”

1377. The Court also finds that, in most instances, the word “satisfaction” has been used by Defendants to refer to the pharmacological attributes associated with a cigarette's level of nicotine delivery. As found in industry documents, the word describes the “hit” of nicotine an individual receives when smoking a cigarette and the effect produced by that nicotine on the central nervouse system when it reaches the brain.

1379. Defendants have claimed that the terms “impact,” “satisfaction,” “hit,” etc., as used in their internal documents, refer only to the taste characteristics of cigarettes. This claim is rejected because the documents themselves prove otherwise. Even though, as noted earlier, the scores of writers of these hundreds of documents do not always use the terms in a consistent manner, the numerous internal documents quoted and discussed *infra*, usually differentiate taste and

impact from satisfaction or "hit," and the context makes clear when reference is being made to the taste and sensory attributes of nicotine as opposed to its physiological or addictive effects.

(1) Philip Morris

1380. Philip Morris has been aware of the need to effectively measure and control the amount of nicotine in cigarettes since as early as the 1940s, when it first conducted studies on controlling nicotine in its Parliament cigarettes. In a 1954 document titled, "An Table of contents of Current and Proposed Quality Control, for example, Development and Research for Benson and Hedges," Philip Morris discussed its program to "ensur[e] the over-all quality and uniformity of the finished Parliament cigarette and thus maintain[ ] its appeal for discriminating smokers." The program was focused on "nicotine content, tar content, acid-base balance, and content of taste and aroma factors." The memorandum described Philip Morris's efforts to use "informally constituted smoking panels and the results of nicotine analyses performed on the blends ... to establish a desirable level of nicotine concentration in the blend and hence also in the smoke."

1384. An October 19, 1977 report titled, "Smoker Psychology Program Review," postulated the following questions: (1) what is the optimum nicotine/tar ratio? (2) given a fixed quantity of nicotine in tobacco, what factors in the cigarette design determine its availability for delivery to the smoker? and (3) how important is the form of the delivered nicotine?

(2) R.J. Reynolds

1386. By 1971, Reynolds also was studying the optimal amount of nicotine to deliver to smokers.

1391. From 1978 to 1984, R.J. Reynolds had a "nicotine optimization" program. During this time, potential optimum levels of nicotine were identified and circulated among company scientists. In 1978, the "optimum 'nicotine strength' " for Winston filters was identified as smoke pH 6.2-6.3 and 0.12-0.13 milligrams of nicotine per puff. In 1979, the "maximum satisfaction" for Winston King Size was believed to be delivered at 1.0 milligrams of nicotine per cigarette. In 1980, R.J. Reynolds reported data from a fuller-flavor low tar consumer satisfaction study, which concluded that there was both an "optimum and minimum nicotine level required to maximize smoking satisfaction.... Camel Lights is in the optimum range. Merit 85 is just above the minimum."

(3) Brown & Williamson and BATCo

1395. BATCo began research on nicotine levels at least as early as the 1950s. By the early 1960s, BATCo and B & W scientists were confident that they could design cigarettes to deliver optimum doses of nicotine. A September 16, 1963 letter to BATCo from Robert Griffith, Director of Research and Development at B & W, discussed "optimum levels" for nicotine and correlated the nicotine level in cigarettes with consumer acceptance. The letter recognized that the nicotine levels of B & W cigarettes were not obtained "by accident" and admitted that "we have a research program in progress to obtain ... any level of nicotine desired."

b. Defendants Have Long Recognized that Controlling the Nicotine to Tar Ratio Would Enable Them to Meet Minimum and Optimum Nicotine Delivery Levels

(1) Philip Morris

1403. Philip Morris understood more than forty years ago that a high nicotine to tar ratio was important in formulating a successful cigarette strategy. A February 9, 1960 memorandum from L.L. Long, Research and Development Engineer, to A.B. Clarke, Research and Development Scientist, and copied to Robert Seligman, who became Vice President of Research and Development, discussed Philip Morris's ongoing efforts to control the amount of nicotine received by a smoker through concentration of nicotine in tobacco smoke while maintaining lower levels of tar. Long wrote:

> One of the objectives of the 1960 cigarette project is the control of TPM ["total particulate matter," or tar] at a low level while maintaining the nicotine level in the smoke at its current level of about 1 mg/cigt. Several years ago some work was conducted along these lines. Nicotine Maleate was added to a low nicotine filler with a resulting increase in nicotine in the smoke. It would be most helpful if you could conduct some investigation in this area along with your work on nicotine control through extraction.

1408. Philip Morris often used actual smokers to provide results for different tests it ran regarding nicotine delivery. The company sometimes sent samples to identified smokers, and sometimes used its own employees as subjects. Philip Morris then analyzed the results in order to inform not only its research but also the production and marketing of its product.

1422. Philip Morris continued to study various nicotine delivery levels while holding tar levels constant in the 1990s. In some of these studies, Philip Morris also examined the interactions between menthol, nicotine, and tar levels in

cigarettes, determining how menthol levels in cigarettes with different levels of nicotine affected smoker impact. These studies included human smoker studies.

(2) R.J. Reynolds

1425. No later than 1972, RJR recognized an urgent need to develop a lower tar cigarette that would deliver a high level of nicotine, in order to have a competitive advantage in the marketplace. In a May 19, 1972 internal memorandum to Claude Teague from Frank G. Colby, Manager of Scientific Information, Colby recounted a conversation he had with an employee of Imperial Tobacco Company while preparing for an industry-wide conference:

> He explained in some detail how desirable it would be to have a high nicotine tar ratio cigarette, but said that unfortunately he did not have any idea how to realize this technologically. Naturally, I did not mention in any way our interest in this subject.

Colby also reported his suspicion that Philip Morris already was developing a high nicotine cigarette. Colby concluded: "I feel these two incidents prove that the high nicotine tar ratio cigarette is a concept which is 'very much in the air.' We should definitely make an effort to be first."

1435. In a January 4, 197 8 memorandum, titled "Nicotine and Smoker Satisfaction," Piehl wrote to Alan Rodgman, RJR scientist, that an objective of the 1977-1978 research was to "[d]etermine the means to alter and control ' *tar'/nicotine ratio* and increase *nicotine transfer efficiency*" with the objective of maximizing smoker satisfaction.

1437. A document setting forth the mission and goals of Reynolds's "Tobacco Development Department" for 1980, 1981, and 1982 indicates that as part of Reynolds's "action plan" it intended to "[d]etermine means to optimize tobacco density and puff count on lights brands" by 1981, and, "[i]n cooperation with Research, establish appropriate T/N ratio, absolute nicotine and strength index for each brand" by 1982.

1449. RJR continued its research into changing the nicotine to tar ratio throughout the 1990s. The company concentrated on research that would allow it to create an ultra low tar product that provided nicotine delivery similar to full-flavor products.

(3) Brown & Williamson and BATCo

1451. Hugh Honeycutt, B & W's Director of Research Services and Analytical

Research admitted that B & W "absolutely" had the ability to manipulate the nicotine to tar ratio of its products.

1454. In the 1960s, BATCo undertook two research projects called HIPPO I (completed in January 1962) and HIPPO II (completed in May 1963), which investigated the role of nicotine in cigarette smoking and examined its potential beneficial physical and psychological effects. Their goal was to control nicotine delivery and change nicotine to tar ratios. Prior to the publication of the 1964 Surgeon General's Report, B & W Generalounsel Addison Yeaman evaluated the findings of HIPPO I and II, and suggested that the best reaction to the Surgeon General's Report was to provide a filter capable of removing certain constituents of smoke considered suspect by public health officials, while still "delivering full flavor-and incidentally-a nice jolt of nicotine."

1455. BATCo, like the other cigarette manufacturers in the 1970s and 1980s, also undertook research to control and maintain nicotine delivery for cigarettes with reduced FTC tar levels. The purpose of studies carried out in 1973 to assess the use of additives to reduce tar while at the same time increasing nicotine delivery to smokers was stated as follows: "The increased importance being placed on the lowering of TPM [total particulate matter] and the controlling of nicotine delivery has made it necessary to investigate the different methods available for producing these changes in smoke." The 1973 study also utilized "ADDITIVES FOR NICOTINE CONTROL," including nicotine tartrate, sodium bicarbonate, and diAmmonium hydrogen phosphate to increase the "extractable nicotine" in the smoke. The researchers found that certain combinations of additives successfully reduced tar while "maintain[ing] the impact and physiological strength levels" of nicotine.

1462. In 1986-1987, BATCo undertook studies that revealed that nicotine delivery could be increased through filter modifications, with one study finding up to a 30% increase in nicotine per puff and a 19% increase in the nicotine to tar ratio.

(4) American

1468. By the 1960s, American was undertaking numerous studies designed to affect the nicotine to tar ratio naturally found in cigarettes. These methods included adding nicotine to reconstituted tobacco, increasing the amount of Burley tobacco-which is naturally higher in nicotine content than other tobaccos-in a blend to determine its effect on the "nicotine yield," and producing tobacco plants, such as *N. Rustica,* that had almost double the concentration of nicotine of other tobacco plants used by American.

1469. In 1969, American researchers, working with researchers from Philip Morris, RJR, and Liggett, conducted experiments "to determine if [genetically different tobacco] varieties differ in their ratio of nicotine to FTC 'tar.' "

c. Defendants Understood the Correlation Between Nicotine Delivery and Cigarette Sales

1493. For several decades, the cigarette company Defendants have recognized that the commercial success of any cigarette depends on its ability to deliver adequate levels of nicotine to smokers. As the internal documents discussed below reveal, each Defendant also understood that its market position, as well as the financial viability of the tobacco industry as a whole, required the development of cigarettes that provide nicotine in amounts sufficient to ensure that smokers become and remain addicted. Accordingly, each Defendant took steps, over a sustained period of time, to develop such cigarettes.

(1) Philip Morris

1494. A May 5, 1975 memorandum from John T. Landry, Philip Morris's Executive Vice President of Marketing, to Clifford H. Goldsmith, President, expressed that Landry was "alarm[ed]" that Marlboro's nicotine delivery had "dropped ... sharply below that of Winston." Landry acknowledged, "it puts us at a competitive disadvantage," and recommended "that this problem be thoroughly explored with Manufacturing and R & D and that every attempt be made to return the nicotine delivery to more suitable levels."

1495. Even though Philip Morris publicly stated for decades that nicotine is used in cigarettes for "taste," an internal Philip Morris document, dated March 18, 1980, discusses the utility of nicotine to Defendants, and to Philip Morris in particular. In that document, a memorandum from Jim Charles, Manager of Research and Development to Robert Seligman, then-Vice President of Research and Development, Charles wrote that "[n]icotine is a powerful pharmacological agent ... and may be the most important component of cigarette smoke." Charles argued that further research on nicotine was vital and that it would have a "direct bearing on our market position in a 10-15 year time frame."

(1)[sic] R.J. Reynolds

1496. A July 3, 1973 memorandum from Jerry R. Moore to R.A. Blevins, Jr., the Director of Marketing and Planning at RJR, reported that a study conducted by Reynolds's Marketing and Development Department found a direct, significant correlation between the amount of "free nicotine" in a brand and the sales level of that brand. Blevinsummarized the results of the study and his

recommendations in a July 12, 1973 memorandum to William S. Smith, Jr., member of the CTR Research Board of Directors, as follows:

> Our analysis suggests that pH does not correlate as closely with share performance as does free nicotine. Our emphasis should be directed toward free nicotine while pH would provide us with a measure of or tool to effect free nicotine.

Free nicotine is nicotine in the unprotonated form, i.e., without a proton or positive chemical charge. *See also* definition and discussion of "free nicotine" at V(C)(2)(d)(1).

1497. In 1973, Reynolds also conducted a "historical review of smoke pH data and sales trends" comparing data for its own cigarettes to that of its competitors. A May 10, 1973 report about the review, written by John D. Woods and Gloria C. Harilee, indicated that "smoke pH data for competitive brand filter cigarettes measured since 1964 were compiled for the purpose of attempting "to correlate these data with cigarette sales trends." Woods and Harilee found that:

> A high pH smoke is strong due to a high concentration of unbound, or free, nicotine in the smoke.... Correlation of these values with sales trends were made and the results showed even stronger positive correlations than were found for smoke pH-sales trends studies.

Similarly, in 1982, Reynolds reported internally that shortly after Philip Morris began increasing smoke pH and free nicotine through the introduction of added ammonia (diammonium hydrogen phosphate) in 1965, Philip Morris's sales began growing very rapidly.

1499. Admitting that there is no "chemical compound more important to a smoker's decision to continue smoking than nicotine," Gary Burger, former RJR Vice President for R & D and, before that, Director of Toxicology, stated that from at least 1983 to 1996, Reynolds researched the threshold level of nicotine to "arrest the decline in the social acceptability of smoking."

1500. In 1989, Reynolds identified "a particularly disturbing difference" between Winston and Marlboro: "smaller puffs of Marlboro delivered higher levels of nicotine into the bloodstream, and delivered them more quickly, than Winston." Reynolds concluded that this difference "could be a major factor in why people stay with a brand ... even though they don't know why."

(3) Brown & Williamson and BATCo

1501. A 1963 letter from B & W's R.B. Griffith, Director of Research and Development, to BATCo's Chemist, John Kirwan, discussed "the question of desirable or optimum levels for either nicotine or sugar or a balance between the two," and how the level of nicotine and sugars might "be varied to win consumer preference for our brands." Griffith pointed out that B & W's "sales pattern [from 1960 to 1963] has been positively correlated with the nicotine level of the tobacco in our products." Griffith went on to state that "the nicotine level of B & W cigarettes [studied] was not obtained by accident." He closed by recognizing the marketing department's role in determining nicotine content in cigarettes, stating, "I think that we can say even now that we can regulate, fairly precisely, the nicotine and sugar levels to almost any desired level management might require ...."

1502. A September 20, 1979 memorandum from the B & W Research Department, written by Rufus Hugh Honeycutt comparing tar and nicotine delivery information amongst various commercial cigarettes, noted that "[p]erhaps not coincidentally, Philip Morris and R.J. Reynolds have the highest average NTE [nicotine transfer efficiency] and the highest USA sales."

1503. On April 7, 1982, BATCo's G.O. Brooks, a research scientist, sent a letter to B & W's William L. Telling regarding a study concluding that when a cigarette's nicotine level "is so low that the nicotine is below the threshold of pharmacological activity then it is possible that the smoking habit would be rejected by a large number of smokers."

Considering this threshold "satisfaction" level, BATCo senior scientist S.J. Green later warned that "we should be aware of the long-term dangers of following the crowd into ultra-low nicotine deliveries." Green explained, "Nicotine is an important aspect of 'satisfaction,' and if the nicotine delivery is reduced below a threshold 'satisfaction' level, then surely smokers will question more readily why they are indulging in an expensive habit."

Green's warning demonstrates BATCo's understanding that the trend towards ultra-low nicotine deliveries could mean "that the market would extinguish because people would get to the point that smoking really would be a matter of taste and pleasure and not nicotine receptors in the brain; at that point, people would find it easier to quit."

2. Defendants Researched, Developed, and Utilized Various Designs and Methods of Nicotine Control to Ensure that All Cigarettes Delivered Doses of Nicotine Adequate to Create and Sustain Addiction

1508. Nicotine delivery levels are not a matter of random variation. Rather,

cigarettes are specifically designed to deliver a range of nicotine doses so that a smoker can obtain her optimal dose from virtually any cigarette on the market, regardless of that cigarette's nicotine delivery level as measured by the FTC method.

1509. Defendants' control of nicotine has not focused simply on delivering as much nicotine as possible, because delivery of large amounts of nicotine can make cigarettes harsh and unpalatable to the smoker. Farone WD, 85:7-16. In addition, an unsmoked cigarette already contains much more nicotine than a smoker will inhale because, as mentioned, *supra*, at ¶ 1368, not all of the nicotine present in tobacco is transferred to cigarette smoke. Typically, a cigarette that delivers approximately one milligram of nicotine in smoke, as measured by FTC testing, retains "about 14-20 milligrams of nicotine in the unsmoked rod." Therefore, it is simplistic to consider only "spiking" of cigarettes by adding extraneous nicotine when determining Defendants' control of nicotine delivery. Rather, their control of nicotine must include consideration of the myriad design parameters Defendants have used to control the dose and form of nicotine delivered to mainstream cigarette smoke. As explained by Dr. Farone, who had extensive personal experience with Philip Morris's cigarette design efforts and objectives as Director of Applied Research from 1977 to 1984, nicotine control-or manipulation-means doing something to change the amount of nicotine that comes off a burning cigarette to make it different than what it would be if you just took tobacco, wrapped it up, put it in a rod, lit that up, and let the nicotine go where it may.... [N]icotine manipulation deals with making specific changes in that design to make nicotine go where you want it to go as opposed to where it would go by itself without changing the design.

1510. As the following Findings of Fact demonstrate, Defendants have used a variety of physical and chemical design parameters to manipulate the nicotine delivery of their commercial products. For example, while Dr. Farone was at Philip Morris, researchers identified fifty-seven different parameters that influence the quality and content of smoke delivery by a burning cigarette. Physical design parameters include cigarette length, circumference, and density; filter composition and design; air dilution or ventilation; and cigarette paper composition and porosity. Chemical design parameters include tobacco blend selection, the chemical composition of tobacco filler, and the choice of additives, including additives such as ammonia and ammonia compounds to influence smoke pH and the amount of free nicotine. Defendants' goal to ensure that their products deliver sufficient nicotine to create and sustain addiction influences their selection and combination of design parameters. No single design parameter is responsible, on its own, for the level of nicotine delivered by a particular cigarette. Rather, Defendants combine design parameters to ensure that any particular cigarette delivers a sufficient level of nicotine.

1511. Defendants' claims that their control of nicotine in their products is strictly for quality control measure are without factual support.

Cigarettes are designed to give a desired tar and nicotine level for each member of any brand family. They are designed into the product and they are not a matter of random variation.... [Defendants' control of nicotine] starts at the design stage and then it is maintained.

1512. Defendants have long claimed that pressure from public health authorities motivated their efforts to manipulate the design of their cigarettes in order to control nicotine delivery. The record does not support those claims. What is true is that in the 1970s, public health groups, such as the Tobacco Working Group in 1976, suggested that Defendants create less hazardous cigarettes by lowering the amount of tar while maintaining the amount of nicotine. However, many of Defendants' internal documents on the issue of nicotine delivery control predate the 1976 recommendations of the Working Group. In addition, even during the limited window of time in which the public health community was encouraging high nicotine/low tar cigarettes, Defendants did not disclose how sophisticated their understanding of nicotine manipulation was or how much they understood about the process of compensation. Finally, even today, long after the Tobacco Working Group and other members of the public health community have acknowledged that such efforts were counterproductive and would not benefit the public, Defendants continue to research and employ techniques to control nicotine delivery in their commercial cigarettes.

1513. Defendants also claim unpersuasively that their research into methods to control nicotine delivery never translated into any commercially successful products. They also challenge the scientific basis for some of the design parameters discussed, i.e., whether such a change in design actually had an effect on nicotine delivery and, correspondingly, addiction. While most of the physical and chemical design parameters discussed below were used in the manufacture of Defendants' commercial cigarettes and did have an effect on nicotine delivery to the smoker, that issue is not, in an of itself, relevant. In the context of these fraud claims, what is relevant is that Defendants firmly believed, as demonstrated by their internal documents, that they could-and did-control nicotine delivery to the smoker by manipulating the design of their cigarettes, and then lied about their knowledge and conduct to the American consumer.

a. Defendants Recognized the Need to Design Cigarettes that Would Produce Low Nicotine and Tar Measurements under the FTC Method While Also Delivering the Minimum Nicotine Levels to Create and Sustain Addiction

1514. Defendants began to anticipate in the 1950s and 1960s, as the relationship between smoking and health was becoming a more prominent subject of public concern, that public interest in less harmful cigarette products could ultimately require reduced levels of nicotine and tar in conventional commercial cigarettes. Defendants also recognized that if they addressed smokers' concerns about the health effects of smoking by reducing the levels of tar in their cigarettes, they might also effect a proportional drop in nicotine. They also recognized that a reduction in nicotine delivery levels which was no longer sufficient to sustain smokers' addiction could devastate their industry. Defendants therefore set out to design commercial cigarettes that were capable of delivering nicotine across a range of doses that would keep smokers addicted.

1515. As discussed earlier, *see generally* Section V(E)(2)(b), *infra,* Defendants have known since the 1960s that individuals smoke to obtain the desired effects of nicotine, and that smokers of lower nicotine yield cigarettes tend to adjust their smoking behavior to titrate (i.e., control) their intake of nicotine to achieve desired levels. This behavioral adaptation is referred to as smoker "compensation." By puffing lower yield cigarettes more frequently and/or more intensively, by blocking ventilation holes in the cigarette filter, and/or by smoking more cigarettes in a day, smokers are able to "compensate" for the lower nicotine deliveries of low nicotine/low tar cigarettes. Id. Defendants used this knowledge in their research on nicotine manipulation and the manufacture of cigarettes.

1516. The primary means by which Defendants have ensured that their low delivery products will sustain smoking addiction is by incorporation of physical design characteristics and ingredients that enable the human smoker to easily obtain his or her reinforcing level of nicotine, regardless of the cigarette's nominal FTC machine-measured yield. Internal documents reveal that Defendants designed their cigarettes to increase the flexibility of their nicotine and tar dosing capacity to smokers even as they reduced nicotine and tar yields as determined by the FTC machine method.

b. Leaf Blend and Filler: Defendants Controlled the Amount and Form of Nicotine Delivery in Their Commercial Products by Controlling the Physical and Chemical Make-Up of the Tobacco Blend and Filler

1517. Nicotine delivery can be controlled through variation of the amount and type of tobacco used to manufacture commercial cigarettes. It can also be controlled through adding, eliminating, or reducing particular substances from a tobacco blend before it is used as a filler. The tobacco blend is the main component of a cigarette that contributes to nicotine delivery because the blend determines how much nicotine will be in the unsmoked rod.

1518. There are three main varieties of tobacco that have been used in the production of commercial cigarettes in the United States-Bright tobacco, Burley tobacco and Oriental tobacco. Each of these types of tobacco has a different chemical composition and different nicotine concentration that occurs naturally. Because of these variations, Defendants blend across types of tobacco and parts of the tobacco leaf, as well as across crop years, to compensate for the year-to-year variations in the tobacco crop.

1521. In addition to naturally-occurring variations across different strains of tobacco, the nicotine content of tobacco leaves in a single plant can also vary based on the age of the plant and their position on its stalk. Nicotine is synthesized in the root of the plant and, generally, leaves located at the top of a plant's stalk have a higher nicotine content than those located at the bottom. Because they have lost most of their nicotine to air, leaves at the bottom of the plant are generally dried out and deliver little nicotine to the smoker. At the top of the living plant, by contrast, the leaves have not yet reached maximum nicotine or alkaloid content and can deliver comparatively greater nicotine when smoked. Defendants recognize these variations and monitor and record the stalk position of the tobacco leaves they purchase.

1522. In addition to the cut tobacco leaves, Defendants' commercial cigarettes contain a variety of other materials, including parts of the tobacco plant that have been altered from their natural state. One such material is reconstituted tobacco, also referred to as blended leaf or reconstituted leaf, which is manufactured out of stems and other small pieces of tobacco that have been removed from the tobacco leaves. In the process of making reconstituted tobacco, water is applied to pieces of stem material so that water-soluble materials, including nicotine, can be removed from the stem and form a sheet. The nicotine and other water soluble materials are treated with various chemicals and additives and added back to the stem material after it has formed a sheet. The sheet is then chopped into small pieces and put in cigarette filler.

1523. Defendants also alter natural tobacco through the use of expanded tobacco, which is tobacco that has been impregnated with liquid that eventually evaporates. This impregnation and evaporation process causes tobacco leaves to shrink when they are dried or cured, after which a chemical such as carbon dioxide or freon is added and causes the tobacco pieces to expand. When this material is heated and expanded, it puffs back up to about the size of the chunk of tobacco when it was originally on the plant.

1524. Defendants can change the cut width of the filler material, which also has an effect on nicotine delivery. As a matter of aerosol chemistry, burning materials that are of a finer cut creates an aerosol with smaller particle size than

materials that are larger. Particle size affects the rate and location of nicotine absorption. The cut width of the filler also influences how much nicotine from the filter will be delivered to the smoke, thereby affecting the nicotine to tar ratio of the smoke.

1525. Defendants are keenly aware of how the combination of different blend components will affect the nicotine delivery of their final products. Some Defendants, including Philip Morris and BATCo, developed sophisticated computer modeling systems to determine exactly what effect each component of the blend would have on nicotine delivery, and then used those systems to design and create their blends.

(1) Philip Morris

1526. Philip Morris has been altering the blend of its tobacco filler to obtain desired levels of nicotine since at least 1954. In a document titled "An Table of contents of Current and Proposed Quality Control, Development and Research for Benson and Hedges," circulated in 1954, Philip Morris explained that comparisons of "analytical data for the blend with estimates of nicotine, tar and pH of the smoke should enable us to set up certain limits or norms within which the chemical composition of the blend must be controlled in order to achieve desired smoking quality." The document recommended:

> enlarg[ing] the scope of our present analytical program to secure estimates of nicotine, nornicotine, total volatile bases, ether solubles and ash, not only for the blend but also for all the grades and types of tobaccos which go into the blend. There is no reason why such data cannot be used as a guide to purchasing. Once norms can be established for the composition of grades and types, samples falling outside the range of desirability can automatically be rejected by the buyers. In this way, the adverse effects of fluctuations in the blend originating in wide differences in leaf composition due to cultural and climatic conditions and crop year can be minimized.

(2) R.J. Reynolds

1535. RJR experimented with adding nicotine to the tobacco stem as early as 1956.

1536. Reynolds used leaf blending as a method for controlling the nicotine content of its cigarettes long before consumers began demanding cigarettes that delivered less tar. Dr. Murray Senkus wrote Divisional Monthly Research Reports in 1964 and 1965, discussing the blend changes tested by the company

in response to the significant increases in the nicotine contents of Burley and flue-cured tobacco crops.

1537. In 1977, RJR embarked on a search for "new means for control of nicotine, tar to nicotine ratio, and satisfaction." Reynolds studied the nicotine delivery of individual blend components and the transfer of nicotine from individual blend components.

1538. As part of its effort to learn how to control the nicotine content of tobacco independently of other components, Reynolds studied agricultural variables that might influence nicotine content in flue-cured and Burley tobaccos. Researchers examined: (1) how variables such as climate, fertilizer, and the height of the tobacco plant affect the amount of nicotine in smoke, and (2) how to develop flue-cured and Burley tobacco with higher nicotine content.

1543. An October 17, 1985 internal invention disclosure prepared by Dwo Lynm and Carl Morrison and addressed to Grover Myers of RJR's Legal Department, described a new proposed method for developing a cigarette that "will meet most of the consumers' needs" by delivering a "high impact of nicotine with low tar delivery." Lynm and Morrison wrote that "the amount of nicotine required for smokers to get an appropriate 'kick' has been calculated to be 10 mg per cigarette in addition to the endogenous nicotine content." Lynm and Morrison proposed adding carbonized flue-cured [CFC] tobacco impregnated with 10 milligrams of nicotine to "the end or in the middle of the hollow tobacco rod in order to deliver more nicotine ... This additional nicotine would lower the T/N ratio drastically."

(3) Brown & Williamson and BATCo

1544. B & W's most senior executives took a great interest in the company's nicotine delivery research. A June 5, 1974 memorandum from R.M. Irby, Jr., Manager of New Products Division, Research and Development, to J.B. McCarthy, Executive Vice President, and copied to J.H. Hager, Executive Vice President, Table of contents d B & W's research and knowledge on "increasing the nicotine content of reconstituted tobacco." The methods for accomplishing this included: adding nicotine to reconstituted tobacco base sheets, replacing current leaf blends with higher nicotine tobacco, cast-sheeting tobacco "dust" that is high in nicotine content, altering filters, and changing smoke content. Irby discussed studies done to raise the nicotine delivery of Pall Mall and Lucky Strike cigarettes and to raise nicotine delivery in low tar cigarettes.

1545. It was known within BATCo that blended cigarettes, which included higher nicotine Burley tobacco in the cigarette, were more alkaline and less

acidic, and had a "greater proportion of free nicotine present in the smoke ... which explains why these types of cigarettes tend to have higher impact than a flue-cured cigarette with the same nicotine delivery."

1546. The tobacco companies also spent substantial resources researching the nicotine delivery strategies of their competitors in order to perfect their own methodologies. For example, in a January 22, 1974 report, titled "A Chemical Examination of B & W and Competitive Reconstituted Tobacco," B & W researcher R.R. Johnson found that reconstituted tobaccos were in use by B & W, Philip Morris, RJR, American, Lorillard, and Liggett. The report acknowledged that "[m]ost reconstituted tobaccos gain significantly in nicotine content during cigarette manufacture," and pointed out that the nicotine transfer for Philip Morris cigarette products was "massive."

1548. Tommy Sandefur, Chairman and CEO of B & W, stated that in 1984 or 1985, when he "became responsible for [B & W's] domestic business," he directed the Research and Development Department to reverse engineer the Marlboro product. He explained that "I wanted to find out how they were doing that because it was important if I was going to compete to improve the quality of my products." The B & W scientists reported to him that Philip Morris had used ammonia in the reconstituted sheet. Sandefur admitted that B & W then began using the same technology, and applying the same technique, as Philip Morris in order to add ammonia to the reconstituted tobacco in its cigarettes.

(4) American

1553. American actively studied blending as a method of increasing the nicotine yield in its low tar cigarettes. Company researchers investigated the effect of increasing the Burley tobacco in its Lucky Strike tobacco blend in 1963 as part of its low tar cigarette studies. The objective of the research "was to determine the effect of increasing the Burley Tobacco in a blend on the yield of nicotine."

1554. In 1963, American also experimented with adding commercial nicotine to its reconstituted tobacco. In an October 8, 1963 document titled, "The Effect of the Addition of 1% Nicotine on the Quality of RC Tobacco," American revealed that it bought commercial nicotine in the form of nicotine citrate, to increase the nicotine content of its reconstituted tobacco.

1555. According to a June 21, 1963 memorandum concerning tobacco blends for filter cigarettes, American researchers increased the amount of Burley tobacco in a blend to determine the effect the addition of the Burley tobacco had on the "nicotine yield." One of the research findings was that the addition of Burley tobacco "increased the volatile bases, including nicotine, in the smoke...."

1556. Later, in 1967, American investigated the production of nicotine from tobacco plants (N. Rustica) with almost double the concentration of nicotine.

c. Nicotine to Tar Ratio: Defendants Have Used Physical Design Parameters to Increase the Nicotine to Tar Ratio of Their Cigarettes

1573. As the cigarette market increasingly shifted to products marked as "low tar/low nicotine" cigarettes, Defendants undertook extensive efforts to control the ratio of nicotine to tar in order to deliver more nicotine despite the decrease in tar.

1575. When there is a decrease in the amount of tar delivered by a cigarette, the nicotine to tar ratio will stay roughly the same only if there is a proportional decrease in the amount of nicotine delivered. If a decrease in tar delivery is not accompanied by a similar decrease in nicotine, the nicotine to tar ratio will rise. This can be illustrated by a simple mathematical comparison of two cigarettes with equal nicotine deliveries, one of which delivers sixteen milligrams of tar and the other of which delivers ten milligrams of tar. If these cigarettes deliver two milligrams of nicotine, their nicotine to tar ratios will be .125 (or 1/8) and .2 (or 1/5) respectively. The ten milligram cigarette will have a higher proportion of nicotine relative to tar in its smoke, and its nicotine to tar ratio will be higher than the sixteen milligram cigarette. Defendants' documents refer, confusingly, to both the nicotine to tar ratio and its mathematical inverse, the tar to nicotine ratio. For ease of understanding and consistency, these Findings of Fact will refer, wherever feasible, to the nicotine to tar ratio rather than to the tar to nicotine ratio.

1576. Defendants have consistently taken the position that "nicotine levels follow tar levels," i.e., as tar goes up or down, nicotine automatically goes up or down proportionately. The facts do not support this claim.

1577. First, as shown, *supra*, Defendants possessed and exercised the ability to precisely control the amount of nicotine in any particular brand, whether full-flavor or light.

1578. Second, as tar levels decreased, nicotine levels either remained steady or increased; even if the nicotine levels remained steady, the nicotine to tar level ratio would actually increase as tar levels decreased. See 1989 Surgeon General's Report at 85:

> Since 1981, the tar delivery of U.S. cigarettes has averaged between 13.0 and 12.7 mg, while nicotine delivery has remained stable at 0.9 mg per cigarette.... In the smoke of popular U.S. low-yield cigarettes, the

> reduction of nicotine, the primary pharmacologic factor in tobacco addition (U.S. DHHS 1988), has not occurred to the same extent as has the reduction of tar. The same development has been observed with cigarette in the United Kingdom (Jarvis and Russell 1985).

1579. Finally, if, in making the claim that nicotine follows tar, Defendants are relying on nicotine and tar values measured by the FTC method, they have long acknowledged that those values do not accurately reflect the actual nicotine and tar delivered to the smoker. Section V(E)(2)(a-b), *infra.*

(1) Filter Design

1581. Defendants researched, designed, and incorporated filters into their light/low tar products in such a way as to allow smokers to determine the amount of nicotine they inhale and increase the nicotine to tar ratio in that inhaled smoke. As researchers inside the industry explored potentially effective filters for tars, they well understood that if nicotine delivery was affected it could reduce the addictive properties of their product. Industry researchers exploring potentially effective filters for tar understood that affecting nicotine delivery could reduce the addictive properties of their product. Accordingly, cigarette company Defendants took steps to design a filter that would register a lower tar level according to the FTC method but would not reduce nicotine transfer into the body. Their goal was to create a filter that, while lowering tar, would deliver a sufficient dose of nicotine to the lungs in order to sustain a smoker's addiction.

(2) Ventilation and Air Dilution

1585. Ventilation holes are small perforations in cigarette paper that dilute mainstream cigarette smoke with air during inhalation. Ventilation holes are created by perforation that can be done with lasers, mechanically, or electrostatically.

(3) Paper Porosity and Composition

1588. Defendants also have altered paper porosity and paper composition to affect the nicotine to tar ratio in smoke. The paper used for cigars and hand-rolled cigarettes does not burn well and evenly, and it often self-extinguishes. Cigarette paper used on manufactured cigarettes is different. It is treated with chemicals that can affect nicotine delivery and burn accelerant chemicals that make the cigarettes burn hotter and faster. Some of the chemical additives that affect nicotine delivery in commercial cigarettes are buffering compounds, including alkaline compounds. They make the paper white, keeping

the ashes a relatively attractive light grey color, and burn accelerants, such as sodium and potassium citrate.

1589. The porosity of cigarette paper refers to the relative amount of air that can permeate or pass through the paper. Air fuels the burning and smoldering tobacco. The cigarette paper used by Defendants to manufacture their commercial products is of controlled porosity. Controlling porosity is a means of controlling the composition and lowering the amount of nicotine in smoke measured by the FTC smoking machine by altering the mix of gases, temperature of the burning tobacco, and the speed at which the cigarette is burned.

1590. Another feature of cigarette paper that can affect the nicotine to tar ratio of smoke delivered to human smokers is the filter overwrap. The filter overwrap is a layer of tough, glued paper that attaches the filter to the tobacco rod and is composed of materials that resist decomposition when held in the lips. The filter overwrap typically extends beyond the filter from a range of a few millimeters to nearly one centimeter. The parameters of FTC testing require the machine to stop smoking at a point that is 3 millimeters beyond the filter overwrap, which means that the smoking machine does not burn all of the tobacco in a cigarette.

1591. Human smokers, of course, can and often do smoke cigarettes all the way to the filter overwrap, thereby obtaining a few extra puffs of nicotine and tar. These puffs contain greater nicotine and tar than puffs of tobacco that are farther away from the filter overwrap for two reasons. First, with each successive puff on a cigarette, the remaining tobacco in the rod and the filter collect nicotine and tar, making the later puffs on a cigarette the richest in those substances. Second, because the filter loses efficiency with each successive puff, nicotine and tar are able to enter the smoker's mouth in greater amounts in the later puffs than in the earlier. Accordingly, the few extra puffs beyond those measured in FTC testing represent disproportionately large increases in nicotine and tar exposure.

d. Smoke pH and Ammonia: Defendants Altered the Chemical Form of Nicotine Delivered in Mainstream Cigarette Smoke for the Purpose of Improving Nicotine Transfer Efficiency and Increasing the Speed with Which Nicotine Is Absorbed by Smokers

(1) Scientific Overview

1592. Defendants have used chemical additives in order to modify the form of nicotine delivered to the smoker and enhance its speed of absorption in the body. Alteration of the pH of cigarette smoke was one of the primary areas of research they pursued for this purpose.

1593. In order to understand the manner in which pH and ammonia intensify and speed the absorption of nicotine it is necessary to set forth a fairly detailed description, or overview, of the "science" involved. Virtually all of this description, which sets forth the basic chemical principles and how they affect the operation of drug delivery systems, is based on the testimony of three Government expert witnesses: Drs. Henningfield, Farone, and Benowitz. Their professional and academic credentials are set forth at great length below, and all three were accepted as experts in their fields, without opposition from the Defendants.

1594. Dr. Henningfield is an expert in psychopharmacology including the areas of health and medical issues related to the development of treatment for medical disorders, tobacco dependence and other drug addictions, and the design and effect of drug delivery systems for addictive drugs; he has a Ph.D. in experimental psychology with an emphasis on behavioral psychopharmacology, which is the study of drugs that affect the brain and the interaction between drugs and addictive behavior. Beginning in 1980, Dr. Henningfield began working at the Addiction Research Center of the National Institute of Drug Abuse ("NIDA") and went on to serve as NIDA's chief scientific advisor to the Federal Drug Administration during its development and consideration of its Tobacco Rule.

1595. Dr. Farone is an expert in the chemistry and biochemistry of alkaloids and addictive drugs, the chemistry of physics and cigarette smoke, cigarette design and technology, and the chemistry and biochemistry of toxic substances and their interactions with living systems; he has a Ph.D. in chemistry and physical chemistry, and is specifically trained, both through formal education and long employment as Director of Applied Research at Philip Morris, in the study of colloidal systems (i.e., chemical aerosols and smoke).

1596. Dr. Benowitz received his medical degree with distinction in research from the University of Rochester, is Board Certified in Internal Medicine, Medical Toxicology, and Clinical Pharmacology, and is an expert in nicotine toxicology and nicotine pharmacokinetics. All three were extensively cross-examined by Defendants. For more detail about Dr. Benowitz's extensive credentials, see Section V(F)(3)(c)(¶ 2705), *infra.* The Court credits their testimony, as cited and discussed in this Section, as accurate, comprehensive, and reliable.

1597. The acidity or alkalinity of a substance is commonly expressed as a measure of pH. Most substances have pH measurements ranging from zero to fourteen, with a pH below seven representing an acidic substance, and a pH measurement above seven representing an alkaline, or basic, substance. The pH

scale is logarithmic, meaning that as pH rises, the alkaline (or basic) nature of a substance increases exponentially by a magnitude of 10 between each unit of measurement on the scale.

1598. For example, a substance with a pH measurement of 6 is ten times more basic than a substance with a pH measurement of 5, while a substance with a pH measure of 7 is 100 times more basic than one with a pH measurement of 5. Increasing the pH by a small percentage can double, triple, or quadruple the amount of free nicotine available for inhalation in cigarette smoke. Even a small amount of free nicotine yields a discernible effect for the smoker.

1599. The pH of tobacco smoke is significant because it affects the chemical form of nicotine delivered in mainstream smoke, which in turn affects the rate and amount of nicotine delivery and the speed of absorption of nicotine over certain biological membranes. Nicotine in cigarette smoke is found primarily in two different chemical states: either the protonated “bound” form or the unprotonated “free” form. At any given pH level, there is a ratio of free to protonated nicotine. As cigarette smoke becomes more basic-that is, as the smoke pH rises-more of the nicotine is delivered in its “free,” unprotonated chemical form. As more nicotine is delivered in the free, unprotonated form, a greater proportion of the nicotine is also delivered in the gas phase of smoke.

1600. Molecule for molecule, the pH of tobacco smoke is an important determinant of how much nicotine reaches a person's bloodstream through cigarette smoking. Creation of more free nicotine by increasing the pH level of cigarette smoke increases “the amount of nicotine that can be readily released from the tobacco rod of a cigarette and, in turn, readily absorbed into the body of the cigarette smoker.” A number of the Defendants' internal research documents refer to the measurement of the amount of nicotine transferred from the original unsmoked tobacco rod to the cigarette smoke (where it is available for inhalation) as “nicotine transfer efficiency” or “NTE.”

1601. Free nicotine is more volatile and more physiologically active than bound nicotine. Consequently, it transfers more rapidly across the biological membranes of the mouth and lungs, and then to the brain, than bound nicotine. Even with increased amounts of free nicotine, very little of the nicotine taken in by a smoker is absorbed in the mouth or throat. Usually, about 90% passes on to the lungs where it is absorbed. Because free nicotine transports across cells more rapidly, the presence of more free nicotine in cigarette smoke also increases nicotine's effect on the central nervous system. By producing an increased and more rapid effect on the central nervous system, free or unbound nicotine gives the smoker a faster and more intense “kick.” The speed with which a drug is delivered to the body influences its addictive potential. The

speed of delivery can be influenced by factors such as: where the drug is targeted, the pH, and the concentration of the drug in vapor form.

1602. There are greater physiological effects, and therefore "impact" on the sensory nerves in the back of the throat and "satisfaction" of the brain receptors, with cigarettes that have a greater percentage of the nicotine in the free form. Two cigarettes with identical nominal machine-measured nicotine yields may give the smoker different pharmacological experiences. This difference is due not to the amount of nicotine but to the form of the nicotine and its availability for absorption in the mouth and lungs.

1603. It is well established in the scientific community that the freebase forms of other drugs of abuse, such as freebase cocaine, are more reinforcing and addicting than their non-freebase counterparts because of the speed with which they reach the brain. The effects of pH on changing the chemical form of alkaloids like cocaine have been discussed in scientific literature for decades. Similarly, alteration of pH is a well established, scientifically-effective means of dose control for certain substances, in particular substances in which variation of pH within physiologically tolerable parameters affects the fraction of drug transferred across membranes of the mouth and throat. Techniques to alter pH so as to change the proportion of free and bound molecules of a substance are understood and employed by pharmaceutical companies to control the bioavailability of many drugs, including nicotine in nicotine-delivering medications.

1604. According to Dr. Michael Dixon, a BATCo scientist, ammonia and ammonia-forming compounds, such as DAP and urea, do not increase the amount of nicotine going into the bloodstream or the speed at which nicotine enters the blood. Dr. Dixon relied on a study he coauthored in 2003 which measured, among other things, nicotine blood levels during smoking. Dr. Dixon was offered as an expert in "smoking behavior." His conclusion is not persuasive because his study measured the amount and speed of nicotine uptake into venous blood. That is not the path by which nicotine is delivered to the brain. After inhalation, nicotine is rapidly absorbed in the lung where it enters the bloodstream and quickly moves into the heart. From the heart, nicotine travels through arterial blood, not venous blood, to the brain and other organs.

1605. There are several methods by which the pH level of cigarette smoke can be altered. One method is the choice of tobacco blend used to make the cigarette. For example, Burley tobacco is naturally higher in alkaloids and nitrates than other tobaccos, and therefore, yields a higher smoke pH.

1606. Another effective method for altering pH is by using additives in the

manufacturing process, such as ammonia or ammonia-based compounds, or other compounds that create ammonia when burned. Ammonia compounds are basic substances that may raise the pH level and convert bound nicotine to free nicotine.

1607. Defendants were well aware of the particular chemical characteristics and effects of free nicotine, and undertook efforts to exploit these features. Internal research at Philip Morris confirmed that cigarette smoke that is more basic increases nicotine's effects on the central nervous system, and that the "rate of entry [of nicotine into the bloodstream] is pH dependent." As one Reynolds document explained:

> In essence, a cigarette is a system for delivery of nicotine to the smoker in attractive, useful form.... As the smoke pH increases above about 6.0, an increasing proportion of the total smoke nicotine occurs in "free" form, which is volatile, rapidly absorbed by the smoker, and believed to be instantly perceived as nicotine "kick."

1608. While some ammonium compounds occur naturally in tobacco, Defendants have attempted to alter the pH of cigarette smoke through the addition of ammonia compounds directly to the filler material as well as through the use of ammonia compounds in the process of making reconstituted tobacco. Because they are not as bitter as nicotine, ammonia compounds also alter the impact and taste of smoke and nicotine, making them more palatable to the smoker.

1609. Defendants have added ammonia compounds in order to enhance consumer use of cigarettes by: (1) increasing the amount of nicotine that is transferred from the tobacco to the smoke; (2) improving the sensory response to nicotine in the mouth and oral mucosa; and (3) increasing the speed of delivery of nicotine to the bloodstream and possibly to the brain.

1610. Ammonia compounds are among the most frequently used additives, measured by volume, in the industry. A B & W document concluded: "RJR alone has ammonia emissions of 900,000 lbs./year in North Carolina.... [T]he U.S. cigarette industry uses about ten million pounds of ammonia compounds a year," and industry ammonia usage "corresponds to about 10 mg of ammonia compounds per cigarette produced."

1611. By 1993, all the cigarette company Defendants used some form of ammonia technology in some of their cigarette products. For example, an April 12, 1994 list of "Ingredients Added to Tobacco in the Manufacture of Cigarettes" by the six largest U.S. manufacturers states that the companies added

ammonia and other ammonium compounds to their cigarettes during the manufacturing process. Since 1986, Defendants have annually disclosed, in statutorily mandated reports to the Department of Health and Human Services, the additives employed in the production of their cigarettes. However, they have not disclosed the quantity or purpose of such additives.

1612. For decades, Defendants have conducted their research and developed their manufacturing processes on the basis of the scientific principles set forth above. In reliance on those principles, they have incorporated the use of ammonia technology in their commercial products with the intent to alter the pH of cigarette smoke and thereby affect nicotine delivery and absorption. In recent years, Defendants have publicly questioned these scientific principles, the validity of which they have acknowledged for decades in their internal documents. The evidence in this case simply does not support the current effort by Defendants to minimize the significance of their use of ammonia technology in commercial products.

1613. First, the internal research documents of Defendants, discussed in the Findings of Fact, *infra*, show that: (1) the cigarette company Defendants have been aware at least since the 1960s of their ability to alter the amount and form of nicotine delivered to smokers by using cigarette design techniques intended to raise the pH of cigarette smoke; (2) they have incorporated design techniques-including, but not limited to, the use of ammonia technology and alterations to the tobacco blend-to raise the pH of the smoke in their commercial products with the purpose and intent of creating cigarettes that would deliver a greater amount of free nicotine and faster absorption of nicotine than cigarettes with lower smoke pH; (3) they took these actions in order to assure that their low tar products would deliver doses of nicotine sufficient to create and sustain addiction in cigarette smokers; and (4) their extensive research on the methods and effects of altering the pH of cigarette smoke demonstrates that their own scientists accepted and operated on the same basic principles of chemistry concerning alteration of smoke pH as those already set forth.

1614. Second, the facts do not support Defendants' claim that the pH of cigarette smoke has not, on average, increased over the years. Before Defendants started using ammonia technology in their products, the pH for cigarette smoke averaged 5.2-5.7. Since the late 1960s, the pH of cigarette smoke has risen slowly, but steadily, and has recently been tested at one full pH unit higher-6.3-6.5-than its level in the 1960s. As already noted, an increase in one unit of pH represents a ten-fold increase in pH. See discussion, *supra*, at ¶ 1597. Even a small increase in smoke pH can cause significant chemical and biological effects by substantially increasing the amount of free nicotine delivered to the smoker.

1615. Finally, there is also substantial documentary evidence set forth below, that Defendants' scientists internally found even "small" increases in pH and free nicotine delivery to significantly increase their ability to deliver an "optimum" dose of nicotine, i.e., one that was capable of creating and sustaining addiction in cigarette smokers.

(2) Individual Defendants' Documents

(a) Philip Morris; see Findings 1616 through 1629
(b) R.J. Reynolds see Findings 1630 through 1648
(c) Brown & Williamson and BATCo see Findings 1649 through 1677
(d) American see Findings 1678 through 1679

e. Other Additives: Defendants Researched the Use of Other Additives to Control Nicotine Delivery

1696. Internal documents show that Defendants researched various additives, in addition to ammonia, which facilitate nicotine delivery. Cigarette smoke contains chemicals that can act synergistically to produce effects that might be even more addicting than nicotine alone. For example, studies by Philip Morris have indicated that levels of acetaldehyde (a chemical involved in alcohol dependence) in smoke can be manipulated through additives so as to produce a mixture of acetaldehyde and nicotine that would be more addictive than either drug alone.

1697. Philip Morris started studying the compound acetaldehyde in 1980, because it had been shown to have positive reinforcing effects, i.e., enhancing a smoker's desire to continue to ingest nicotine.

1699. In 1982, Dr. DeNoble reported that preliminary studies showed that acetaldehyde readily penetrated the blood-brain barrier. DeNoble's studies on acetaldehyde revealed a "synergistic effect" with nicotine. In other words, "the combination of nicotine with low doses of acetaldehyde caused more powerful results than either one of the drugs acting alone."

1700. Also, in 1982, DeNoble presented his acetaldehyde research to Philip Morris corporate officers in meetings in Richmond and at Philip Morris headquarters in New York. Subsequent to his presentations, Philip Morris executives expressed interest in finding the ratio of the acetaldehyde-nicotine combination that would be optimally reinforcing. DeNoble recounted that Philip Morris considered the acetaldehyde work "very sensitive and that [the company] did not want it to be misinterpreted if it got out." Philip Morris scientists also charted the effect of the presence of acetaldehyde in cigarettes upon sales.

1701. Philip Morris recognized "[t]here was a practical aspect of the super-additive quality of the reinforcing effects of nicotine and acetaldehyde." According to Paul Mele, a scientist in DeNoble's lab, their supervisor in the Biochemical Research Division, Jim Charles, "discussed with us the importance of finding the optimum ratio of nicotine and acetaldehyde that was reinforcing in the self-administration test."

1702. BATCo researchers were aware as early as 1968 of the importance of nicotine and of the potential value of a product that combined nicotine with some other chemical to increase its pharmacological effects. Minutes written by S.J. Green from a BATCo conference held in Hilton Head, South Carolina, on September 24-30, 1968, included the following conclusion:

> In view of its pre-eminent importance, the pharmacology of nicotine should continue to be kept under review and attention paid to the possible discovery of other substances possessing the desired features of brain stimulation and stress-relief without direct effects on the circulatory system. The possibility that nicotine and other substances together may exert effects larger than either separately (synergism) should be studied and if necessary the attention of Marketing Departments should be drawn to these possibilities.

3. Defendants Have Made False and Misleading Public Statements Regarding Their Control of the Nicotine Content and Delivery of Their Products

1705. Despite the overwhelming evidence of their research into and utilization of methods to control the amount and delivery of nicotine in cigarettes, Defendants have denied, repeatedly and publicly, that they manipulate nicotine content and delivery in cigarettes in order to create and sustain addiction. Defendants have also repeatedly and publicly claimed that the levels of nicotine delivered by cigarettes are determined by their levels of tar delivery. [Footnote 16 omitted.]

a. The Waxman Hearings

1706. In 1994, the United States Congress held a series of public hearings regarding the addictiveness of cigarettes and the tobacco industry's design of cigarettes and manipulation of nicotine. These hearings, before the House of Representatives Subcommittee on Health and the Environment, later became known as the "Waxman Hearings," referring to Subcommittee Chairman Henry Waxman of California. The Chief Executive Officers of six Defendant cigarette manufacturers-Philip Morris, B & W, RJR, Lorillard, Liggett, and

American-appeared voluntarily at a Subcommittee hearing on April 14, 1994.

1707. During the April 14, 1994 hearing, the CEOs testified under oath and before television cameras to the following: [Footnote 17 omitted.]

> Philip Morris did knowingly cause to be transmitted the testimony of President and Chief Executive Officer William I. Campbell. Campbell denied that nicotine is addictive, denied that Philip Morris research establishes that smoking is addictive, and denied that Philip Morris manipulates the amount of nicotine contained in cigarettes.
>
> RJR did knowingly cause to be transmitted the testimony of Chairman and Chief Executive Officer James Johnston. Johnston denied that nicotine is addictive and denied that RJR manipulates the amount of nicotine contained in cigarettes.
>
> American did knowingly cause to be transmitted the testimony of its Chief Executive Officer, Donald S. Johnston. Johnston denied that American manipulates the amount of nicotine contained in cigarettes.
>
> B & W did knowingly cause to be transmitted the testimony of Chief Executive Officer Thomas Sandefur. During this hearing, Sandefur made material misrepresentations regarding B & W's control of the amount of nicotine contained in its cigarettes.

1708. In a written statement submitted by Philip Morris on March 25, 1994, to the House of Representatives Committee on Energy and Commerce in connection with the Waxman Hearings, Philip Morris asserted that it “does nothing in the processing of tobacco or the manufacture of cigarettes that increases the nicotine in our products above what is naturally found in tobacco.” Philip Morris also stated that the FTC testing method provided consumers with “information concerning the relative nicotine yields of products that permit them to make an informed choice.”

1709. On April 14, 1994, William I. Campbell, President of Philip Morris U.S.A., testified at the Waxman Hearings that “Philip Morris does not add nicotine to our cigarettes. Philip Morris does not manipulate nor independently control the level of nicotine in our products.” In his written statement to the Committee of the same date, Campbell stated that

> [w]hen creating a cigarette for a tar category, we select a particular tobacco blend and flavors to provide “uniqueness” for a product.... So, how do we “manipulate” or independently “control” nicotine as our

> critics charge? *The answer is we don't.* We accept the nicotine levels that result from this process. (emphasis in original).

1712. In a written statement submitted by RJR on March 24, 1994 to the House Committee on Energy and Commerce in connection with the Waxman Hearings, Reynolds stated that it does not ... establish specific nicotine yields or manipulate nicotine to create, maintain or satisfy "addiction...." It is a simple fact that reducing "tar" yields automatically results in proportional reductions in nicotine.

In a February 28, 1994 letter mailed to FDA Commissioner Kessler in advance of the Waxman Hearings, Reynolds's CEO James W. Johnston claimed that "R.J. Reynolds Tobacco Company does not increase the nicotine in its cigarettes above what is found naturally in tobacco."

1713. On April 14, 1994, Reynolds's CEO James Johnston testified at the Waxman Hearings that RJR does not "add, or otherwise manipulate nicotine to addict smokers.... [W]e do not do anything to hook smokers or to keep them hooked." In his written statement to the Committee of the same date, Johnston claimed that the level of nicotine contained in a cigarette is proportional to and linked to the level of tar. Johnston also stated that the level of nicotine present in a cigarette is not "a result of a decision to 'manipulate' nicotine levels to some carefully controlled 'addictive level.' The concept of an 'addictive level' [of nicotine] ... is not a concept known to or understood by Reynolds Tobacco."

1715. In a written statement submitted by B & W on March 25, 1994 to the House Committee on Energy and Commerce in connection with the Waxman Hearings, B & W stated that "[t]he only direct source of nicotine in cigarettes manufactured by Brown & Williamson Tobacco Corporation is the tobacco that is used in the cigarettes." B & W also asserted that "[t]he filtering and ventilation techniques that are utilized by B & W result in the smoker's receiving only a small fraction of the nicotine contained in the tobacco that was used to produce the cigarette."

1716. In an April 14, 1994 written statement submitted to the House Committee on Energy and Commerce in connection with the Waxman Hearings, Thomas E. Sandefur, Jr., Chairman and CEO of B & W, stated that "Dr. Kessler suggested that cigarette manufacturers 'commonly add nicotine to cigarettes to deliver specific amounts of nicotine.' Brown & Williamson has never done that." Sandefur also stated that B & W "believe[s] that smokers can expect to receive lower amounts" of nicotine from cigarettes that yield lower amounts in FTC testing.

1718. When asked by a Member of Congress, during a continuation of the Waxman Hearings on June 23, 1994, whether B & W believed "that nicotine is present for taste or is it in cigarettes for its drug-like qualities," Thomas Sandefur, then-Chairman and CEO of B & W, stated under oath, "we very strongly believe that nicotine is a very important constituent in the cigarette smoke for taste." Sandefur further testified at the same hearing that he did not believe that nicotine is a drug.

1720. Sandefur also testified to Congress on June 23, 1994, on behalf of B & W, "We do not manipulate the nicotine levels of our cigarettes...."

1721. In a written statement submitted by American on March 25, 1994, to the House Committee on Energy and Commerce in connection with the Waxman Hearings, American stated that it "does not use nicotine in the manufacture of its cigarettes" and that "nothing is done in the tobacco processing or manufacture of cigarettes by the American Tobacco Company to increase nicotine beyond that naturally occurring in tobacco."

1722. On April 14, 1994, Donald S. Johnston, Chairman and CEO of American, testified at the Waxman Hearings that:

> the American Tobacco Company does not use nicotine in the manufacture of its cigarettes.... American has no desire or intent to manipulate nicotine. At no time has the American Tobacco Company attempted to market a cigarette based on its nicotine content. Or more generally, has it ever designed or marketed a cigarette with the purpose or intent of selling nicotine.

1730. The Tobacco Institute also made a statement before Congress in connection with the Waxman Hearings. On March 25, 1994, the Tobacco Institute's spokesperson, Charles O. Whitley, testified that "nicotine levels are a function of tar levels. Over the past 30 years or so, the consumer demand for lighter cigarettes has led the tobacco manufacturers to reduce tar levels ... and the nicotine levels have dropped correspondingly." Whitley further testified that "we do not add nicotine, have not added nicotine, we do not manipulate nicotine." In the written statement submitted by Whitley in connection with his testimony, Whitely stated that FDA Commissioner Kessler's suggestions that cigarette manufacturers add nicotine to cigarettes to produce and sustain addiction were "unequivocally ... false," and that "when ... 'tar' levels" are reduced, "nicotine is reduced automatically."

b. Defendants' False and Misleading Public Statements Continued After the Waxman Hearings

1731. On February 28, 1994, Philip Morris distributed a public statement that stated:

> There is nothing done in the processing of tobacco or manufacture of cigarettes by Philip Morris that increases the nicotine in the tobacco blend above what is normally found in tobacco.... Philip Morris provides its consumers with a range of choices in tar and nicotine levels in its products. As a matter of fact, over the years, consumer taste preferences have resulted in products with lower levels of both tar and nicotine. For many years, nicotine levels for all cigarettes have been measured pursuant to FTC methods and publicly displayed in every cigarette advertisement.

1732. In an advertisement in the New York Times released the day following the CEOs' 1994 Congressional testimony, titled "Smokers and Non-Smokers: Facts You Should Know," Philip Morris stated: "Philip Morris does not 'manipulate' nicotine levels." The advertisement claimed that Philip Morris's methods of "quality control [do] not constitute 'manipulation.' "

1733. On June 23, 1994, after a connection between the use of ammonia technologies and increased nicotine deliveries was publicized, Philip Morris released a press statement saying:

> [t]here is no indication that ammonia compounds in our cigarettes alter the amount of nicotine the smoker inhales.... [T]he presence of ammonia compounds in cigarettes does not support Dr. Kessler's allegation that cigarette companies manipulate nicotine levels to "addict" their customers.

1734. In a June 14, 1995, letter to the editor of The New York Times, written by James Morgan, then President and CEO of Philip Morris, criticizing an article that The Times had published regarding Philip Morris's research and marketing practices, Morgan claimed that "basic research regarding 'tar' and nicotine ratios was never used in the company's manufacturing processes to alter, much less 'manipulate,' the natural ratio of 'tar' to nicotine in the cigarettes the company sells."

1735. An October 18, 1995 Philip Morris press release stated, in part, that "Philip Morris U.S.A. does not use ammonia in the cigarette manufacturing process to increase the amount of nicotine inhaled by the smoker or to 'affect the rate of absorption of nicotine in to [sic] the bloodstream of the smoker,' or to 'increase the potency of the nicotine a smoker actually inhales.' "

1736. Defendants have also prepared internal "talking points" documents to prepare their spokespersons for public comment on important smoking and health issues. For example, on July 8, 1994, Christopher Proctor sent to all General Managers, BAT Corporate Affairs Managers, and BATCo Board members a memorandum including "Questions and Answers related to U.S. hearings." Recipients were told to use the materials in response to questions from media and staff. Regarding nicotine, BATCo's response was that "BAT does not 'manipulate' the level of nicotine in its products." Recipients were also instructed to respond to questions regarding addiction that "BAT does not 'spike' its tobaccos with nicotine. Smoking is not an addiction."

1737. B & W issued a press release in 1994 that stated: "B & W does nothing in the manufacture of its tobacco products that increases the level of nicotine above that which is naturally found in the tobacco plant, nor does it artificially increase nicotine."

1738. In a June 1994 article, BAT spokesman Ralph Edmonson stated, "It is nonsense to say we want to make people more addicted to nicotine."

1739. In a 1994 letter to FDA Commissioner David Kessler, James Johnston, Chairman and CEO of RJR, stated that "R.J. Reynolds Tobacco Company does not increase the nicotine in the tobacco we use in the manufacture of our cigarettes." (emphasis in original).

1740. In 1994, Reynolds placed an advertisement in national media outlets, featuring a photograph of RJR's Chairman James W. Johnston holding a burning cigarette with the following quote in large lettering under the photograph: "WE DO NOT 'SPIKE' OUR CIGARETTES WITH NICOTINE." In the text of the advertisement, Reynolds claimed that:

> Recently, a TV show accused tobacco companies of somehow "spiking" the level of nicotine in our products to "addict" smokers. As Chairman of a tobacco company and a smoker, I want America's 45 million smokers to know that this is sheer nonsense. At R.J. Reynolds *we do not increase the level of nicotine in any of our products in order to "addict" smokers.* Instead of *increasing* the nicotine levels in our products, we have in fact worked hard to *decrease* "tar" and nicotine. Much of the recent controversy has focused on our use of various techniques that help us reduce the "tar" (and consequently the nicotine) yields of our products.(emphasis in original).

1741. In a June 21, 1994 press release, RJR contended that its use of ammonia or ammonia compounds in processing tobacco "do[es] not have any technical or

function [sic] effect in the finished product."

1742. The Tobacco Institute also drafted a 1994 press release that stated:

> Cigarette manufacturers do not "manipulate" the level of nicotine in various brands. Nicotine levels follow "tar" levels-as manufacturers have reduced "tar" levels and yields over the years to satisfy changing consumer tastes, nicotine levels and yields have fallen correspondingly.

1743. On a March 27, 1994, airing of "Face the Nation," Brennan Dawson, Tobacco Institute Senior Vice President of Public Affairs, stated:

> The industry does take the position that ... not only do they not add nicotine, but they don't manipulate nicotine. So Congress has been told formally by every cigarette manufacturer in the United States that this claim is without foundation.

1744. On October 18, 1995, BAT denied in the press that it had "doctored its cigarettes" based on reports from America that ammonia could boost nicotine delivery. BAT stated that "[t]here is no way we add anything to enhance the nicotine."

1745. Defendants' public denials were likewise reflected in submissions to government bodies. For example, on January 2, 1996, RJR submitted its "Comments of R.J. Reynolds Tobacco Company Concerning FDA's Jurisdictional Analysis" to the Food and Drug Administration. Reynolds stated in its comments that its decades of research concerning nicotine "[did] not reflect an intent to provide smokers with pharmacologically active 'doses' of nicotine.... Reynolds's cigarette design research and the cigarettes that Reynolds has marketed and advertised to smokers demonstrate an intent to provide smoking taste and pleasure."

1748. On January 29, 1998, Altria CEO Geoffrey Bible testified before the House of Representatives Commerce Committee in hearings that were televised nationwide. Bible stated:

> I'm told that ammonium compounds are used in two ways in our products. In the first instance they are used as a blending agent in the manufacture of what is called sheet tobacco, which is included in the cigarette.... It is also used as a flavor. But I'm also told that the ammonium compounds that are used in the cigarettes we sell do not cause the amount of nicotine in smoke to rise. It does not change the form of the nicotine that goes to the brain. And it may result in a slight

> increase in the amount of nicotine in the mouth, ... but that the nicotine absorbed through the mouth reaches the brain more slowly than nicotine absorbed through the lung.

1751. Defendants' public denials of nicotine manipulation continue. As of 2004, Philip Morris's current public Internet website states that: "[S]ome have alleged that we use specific ingredients to affect nicotine delivery to smokers. That is simply not true."

1752. As of 2004, RJR's public Internet website states that RJR "do[es] not add nicotine or any nicotinic compounds to any of our cigarettes, nor do we do anything to enhance the effects of nicotine on the smoker." This statement has been on RJR's website for several years.

1753. As of 2004, B & W's current public Internet website states that: "Brown & Williamson does not in any way control the level or nature of nicotine in cigarettes to induce people to start smoking or to prevent people from quitting."

c. Testimony Consistent with Fraudulent Public Statements

1754. In deposition and trial testimony, and in discovery responses, Defendants have made the same or corresponding statements denying their ability and efforts to control nicotine.

1755. On June 21, 2002, Hector Alonso, Vice President of Product Development and Technology at Philip Morris, when asked "Does Philip Morris exercise any control over the level of nicotine in the cigarettes that it sells," answered unequivocally "No." Alonso further stated that Philip Morris controls tar delivery, and repeated the oft-invoked public industry position that nicotine follows tar.

4. Conclusions

1758. The Defendants have repeatedly made vigorous and impassioned public denials-before Congressional committees, in advertisements in the national print media, and on television-that neither smoking nor nicotine is addictive, and that they do not manipulate, alter, or control the amount of nicotine contained in the cigarettes they manufacture. The Findings of Fact contained in this Section and Section V(B), *supra,* provide overwhelming evidence that those statements are false.

1759. As established by the Findings of Fact set forth in this Section, cigarette company Defendants researched, developed, and implemented many different

methods and processes to control the delivery and absorption of the optimum amount of nicotine which would create and sustain smokers' addiction. These methods and processes included, but were not limited to: altering the physical and chemical make-up of tobacco leaf blends and filler; maintaining or increasing the nicotine to tar ratio by changing filter design, ventilation and air dilution processes, and the porosity and composition of filter paper; altering smoke pH by adding ammonia to speed nicotine absorption by the central nervous system; and using other additives to increase the potency of nicotine.

1760. The fact that some of these methods and processes may also have been used, as Defendants argued, to improve flavor and taste, especially of low tar cigarettes as they were developed in response to the fears of the public about the adverse health effects of smoking, is in no way inconsistent with these Findings of Fact that Defendants also used them to manipulate, and increase the amount and form of nicotine delivered in cigarettes.

1761. Nor is the fact that during the 1970s, the public health community may have encouraged the development of low tar cigarettes because it believed-erroneously-that nicotine levels would fall as tar levels fell, in any way inconsistent with these Findings of Fact. What the public health community did or did not know is irrelevant to the issue of what Defendants knew about the relationship between nicotine and tar and whether they knowingly made false public statements about that relationship.

1762. The words of Defendants themselves establish that the goal of their extensive efforts, through research and experimentation, to control the levels of nicotine delivery was to ensure that smokers obtained sufficient nicotine to create and sustain addiction:

Philip Morris listed as one of the achievements of its Electrophysiological Studies Research Group a discovery “that there are optimal cigarette nicotine deliveries for producing the most favorable physiological and behavioral responses.” ¶ 947, *supra.*

RJR's “top priority [was] to develop and market low ‘tar’ brands ... that: [m]aximize the physiological satisfaction per puff-the single most important need of smokers.” ¶ 1431, *supra.*

BATCo named as a “high priority” development of “alternative designs (that do not invite obvious criticism) which will allow the smoker to obtain significant enhanced deliveries should he so wish.” ¶ 1460, *supra.*

The “major objective” of Lorillard's study of filter design was to “increase the

physiological impact and/or nicotine to tar ratio in ultra low tar cigarettes." ¶ 1488, *supra.*

1763. In sum, the evidence as presented in these Findings of Fact is overwhelming that Defendants have, over the course of many years, time and again-and with great self-righteousness-denied that they manipulated the nicotine in cigarettes so as to increase the addiction and dependence of smokers. Those denials were false.

KESSLER'S Table of contents - (Part D is omitted) PART V. E:

V. E. Defendants Falsely Marketed and Promoted Low Tar/Light Cigarettes as Less Harmful than Full-Flavor Cigarettes in Order to Keep People Smoking and Sustain Corporate Revenues

Plaintiff's First Amended Complaint First Cause of Action - Negligence; Second Cause of Action - Strict Products Liability; Third Cause of Action - False Representation; Fourth Cause of Action - Deceit, Fraudulent Concealment; and, Sixth Cause of Action - Breach of Express Warranty

Kessler Finding of Fact Nos. 2023 through 2170; 2173 through 2225; 2230 through 2290; 2294 through 2341; 2346 through 2375; 2377 through 2595; and 2626 through 2629

Exemplars of Relevant Findings of Fact:

2023. For several decades, Defendants have marketed and promoted their low tar brands as being less harmful than conventional cigarettes. That claim is false, as these Findings of Fact demonstrate. By making these false claims, Defendants have given smokers an acceptable alternative to quitting smoking, as well as an excuse for not quitting.

2024. Defendants used a combination of techniques to market and promote their low tar brands. Defendants' marketing has emphasized claims of low tar and nicotine delivery accompanied by statements that smoking these brands would reduce exposure to the "controversial" elements of cigarette smoke *(i.e.,* tar). Since the 1970s, Defendants also have used so-called brand descriptors such as "light" and "ultra light" to communicate reassuring messages that these are healthier cigarettes and to suggest that smoking low tar cigarettes is an acceptable alternative to quitting. In addition to appealing advertising and easily-remembered brand descriptors, Defendants have used sophisticated marketing imagery such as lighter color cigarette packaging and white tipping paper to reinforce the same message that these brands were low in tar and

therefore less harmful. See Section V(E)(5), *infra* (Defendants' deceptive marketing of low tar cigarettes).

2025. Even as they engaged in a campaign to market and promote filtered and low tar cigarettes as less harmful than conventional ones, Defendants either lacked evidence to substantiate their claims or knew them to be false. Indeed, internal industry documents reveal Defendants' awareness by the late 1960s/early 1970s that, because low tar cigarettes do not actually deliver the low levels of tar and nicotine which are advertised, they are unlikely to provide any clear health benefit to human smokers, as opposed to the FTC smoking machine, when compared to regular, full flavor cigarettes.

2026. As Defendants have long been aware, nicotine delivered by cigarettes is addictive *(see* Section V(B)(3), *supra* (addiction)). Defendants' internal documents demonstrate their understanding that, in order to obtain an amount of nicotine sufficient to satisfy their addiction, smokers of low tar cigarettes modify their smoking behavior, or "compensate," for the reduced nicotine yields by taking more frequent puffs, inhaling smoke more deeply, holding smoke in their lungs longer, covering cigarette ventilation holes with fingers or lips, and/or smoking more cigarettes. See Section V(E)(2)(b), *infra* (smoker compensation). As a result of this nicotine-driven smoker behavior, smokers of light cigarettes boost their intake of tar, thus negating what Defendants have long promoted as the primary health-related benefit of light cigarettes: lower tar intake.

2027. Defendants did not disclose the full extent and depth of their knowledge and understanding of smoker compensation to the public health community or to government regulators.

2028. Defendants' conduct relating to low tar cigarettes was intended to further their overarching economic goal: to keep smokers smoking; to stop smokers from quitting; to encourage people, especially young people, to start smoking; and to maintain or increase corporate profits.

1. Low Tar/Light Cigarettes Offer No Clear Health Benefit over Regular Cigarettes

a. History of Health Claims

2029. In the early 1950s, on the heels of a series of studies linking smoking and disease, the Defendant cigarette manufacturers began making health claims, often using models in doctors' white coats, in their advertising:

> American Tobacco Co. made representations "that its cigarettes were less

> irritating to the throat than competing brands, offered one's throat protection, were easy on one's throat, and provided protection against throat irritation and coughing....”
>
> R.J. Reynolds Tobacco Co. “represented to the public ... that the smoking of such cigarettes ... aided digestion”; “represented that the wind and physical condition of athletes would not be impaired by the smoking of as many Camel cigarettes as desired”; and “represented that the smoking of Camel cigarettes was soothing, restful, and comforting to the nerves, and protected one against becoming ‘jittery’ or ‘unsure’ when subjected to intense nerve strain....”

2030. As discussed in great detail in section V(E)(1)(a), *infra*, the FTC successfully prosecuted the Defendant cigarette manufacturers' for some of these health claims.

2031. Those prosecutions led to public calls for a ban on advertisements containing such health claims. (no bates) (JD 043377) (Advertising Age (Dec. 21, 1953)) (“Cigarette advertisers were urged today by the National Better Business Bureau to adopt an eight point code to eliminate unfounded health claims in cigarette advertising.”).

2032. Given the public's concern over tar and lung cancer, the “White Coat” ads of the 1940s and early 1950s gradually disappeared, and a wave of ads featuring claims about filtration and tar reduction became the new basis for competition.

2033. Defendants competed through comparative filtration ads in the period following 1953.

2034. In 1954, the FTC issued a letter to all tobacco companies announcing its intention to adopt uniform standards for cigarette advertising “to prevent the use of false or misleading claims.” During the ensuing negotiations with cigarette manufacturers, the FTC advised the industry to conform its advertising with FTC decisions, “including decisions finding that comparisons of tar and nicotine between brands were false and misleading.”

2035. In 1955, the FTC adopted the “Cigarette Advertising Guides,” proscribing any implicit or explicit health claims in cigarette advertising. The Guides did, however, provide a limited exception to this general rule, for what the FTC believed were implicit health claims. This exception allowed comparative ads claiming that a cigarette was “low in nicotine or tars,” provided it has “been established by competent scientific proof applicable at the time of dissemination that the claim is true, and if true, that such difference or differences are

significant." At the same time, some members of the public health community urged the development and adoption of cigarettes with reduced tar yields.

2036. By the mid to late 1950s, the American cigarette manufacturers responded with a heated "tar derby" of competing claims about the effectiveness of various filters: "[C]igarette companies advertised that certain brands were lower in 'tar' and nicotine and, by implication, less dangerous."

2037. Smokers responded too, switching in droves to filtered cigarettes.

2038. However, Congress and the FTC perceived that the resulting competition was confusing since different cigarette manufacturers sought to substantiate their "low tar" claims based on different "scientific" testing methods.

2040. "[T]he position taken by the FTC at this time was that the simple fact of listing tar and nicotine deliveries ... constituted an implied health claim," because the "implication was that these cigarettes would be less hazardous or less harmful." On December 17, 1959, the FTC informed tobacco manufacturers that it henceforth would bar all health claims in advertising, including "all representations of low or reduced tar or nicotine, whether by filtration or otherwise." The FTC further "inform[ed] the industry that in its opinion the evidence then available would support a complaint against any marketer who made any reference to tar or nicotine content, charging that such a reference was false and misleading."

2041. A month later, the FTC requested that the cigarette manufacturers agree to make no references to tar and nicotine in their advertising, and the manufacturers agreed.

b. The FTC Method

2042. The FTC thought the 1964 Surgeon General's Report provided "an evidentiary foundation to support a Rule requiring a positive statement [of average 'tar' and nicotine yields] in [cigarette] labeling and advertising."

2043. Within a week of the issuance of the 1964 Surgeon General's Report, the FTC proposed a Trade Regulation Rule that, among other things, would permit the advertising of tar and nicotine yields, provided that such advertising was "verified in accordance with a uniform and reliable testing procedure approved by the Federal Trade Commission."

2044. According to the FTC, "[c]onfusion can be obviated, and the ability of consumers to make an intelligent choice among competing brands protected,

only if the measurement of cigarette-smoke ingredients accords with a uniform, fully reliable and approved testing procedure."

2045. "[T]here was substantial support for the proposition that an accurate statement of tar and nicotine content would be in the public interest...."

2050. When the FTC gave manufacturers permission to make disclosures of tar and nicotine yields, it "recognized that the result would be that consumers would, in fact, believe that lowered delivery cigarettes were less hazardous and less harmful."

2051. The FTC's change in policy to permit these claims was designed to achieve two goals: provide consumers with an incentive to smoke the lower tar/nicotine cigarettes rather than the higher tar/conventional cigarettes and give manufacturers a competitive incentive to produce cigarettes with low levels of tar and nicotine.

2052. The federal government wanted to provide consumers with information that they could use to compare brands.

2053. In addition, given the premise of a dose-response relationship-*i.e.*, more tar equals more disease risk-the FTC wanted to encourage competition among the cigarette manufacturers, thereby increasing the research, development, and production of cigarettes with lower FTC-measured tar yields. *See, e.g.*, (no bates) (JD 043418 at 17) ("Based upon the proposition that lower yield cigarettes present a lessened hazard to the American public," the FTC has acted to "prompt cigarette manufacturers to develop less hazardous cigarettes."); (Sen. Warren G. Magnuson, News Release, Nov. 27, 1967) ("The results of the first government tests ranking cigarette brands by tar and nicotine levels were released today.... Hopefully, the wide dissemination of this information and the growing awareness of its significance among the smoking public will channel competition in the cigarette industry toward the marketing of cigarettes of progressively lower tar and nicotine content.").

2054. The theory was that the public would shift its consumption away from higher tar products, and toward lower tar products, just as it had done with the advent of filter-tipped cigarettes. In this way, it was anticipated that the national sales-weighted-average tar yields of cigarettes sold in the United States would decline, and the public health would benefit.

c. The FTC Method Does Not Measure Actual Tar and Nicotine Delivery

2061. Within months after it notified cigarette manufacturers on March 24, 1996

of its decision to allow advertising of tar and nicotine yields so long as the Cambridge Filter Method was used, the FTC invited cigarette manufacturers to comment in detail on the precise method to be used to measure tar and nicotine yields. [Footnote 24 omitted.]

2062. Defendants "initially resisted imposition of the Cambridge testing method and claimed it would be inaccurate" because different smokers "smoke differently-and even smoke differently at different times." This is known as smoker variation. Early in the FTC process of developing a standard testing method, Defendants advised the Agency that, because of smoker variation, the Cambridge Filter Method would not measure the tar or nicotine that a human being would ingest from smoking any particular cigarette:

> No two human smokers smoke in the same way. No individual smoker always smokes in the same fashion. The speed at which one smokes varies both among smokers, and usually also varies with the same individual under different circumstances even within the same day. Some take long puffs (or draws); some take short puffs. That variation affects the [tar and nicotine] quantity in the smoke generated.

2064. The FTC's press release announcing its decision clearly described the limitations of the standardized test method it was adopting. (no bates) (JE 061264 at 1-2). The FTC stated:

> No test can precisely duplicate conditions of actual human smoking and, within fairly wide limits, no one method can be said to be either "right" or "wrong." The Commission considers it most important that the test results be based on a reasonable standardized method and that they be capable of being presented to the public in a manner that is readily understandable.... [T]he public interest requires that all test results presented to the public be based on a uniform method used by all laboratories. Use of more than one testing method would produce different results which would only serve to confuse or mislead the public.
>
> The Cambridge Filter Method does not and cannot measure these many variations in human smoking habits.... It does not measure all of the tar and nicotine in any cigarette, but only that in the smoke drawn in the standardized machine smoking according to the prescribed method. Thus, the purpose of testing is not to determine the amount of tar and nicotine inhaled by any human smoker, but rather to determine the amount of tar and nicotine generated when a cigarette is smoked by machine in accordance with the prescribed method.

2065. On that same day, the Tobacco Institute issued a press release stating that the FTC method was "unsound" and declaring that the " 'tar' and nicotine results" produced by the FTC method "may be inaccurate [and] misleading" to consumers. Tobacco Institute Press Release, Tobacco Institute Says FTC Chose Unsound Test Methods: "Tar" and Nicotine Results May Be Inaccurate, Misleading, Aug. 1, 1967. Among other things, the press release pointed out that humans smoke cigarettes differently and that "per cigarette" tar and nicotine yields therefore would be "useless and misleading" to smokers who do not smoke within the FTC parameters.

2066. Defendants did not, however, disclose their knowledge that smokers would ultimately ingest as much if not more nicotine and tar from low-delivery cigarettes as they would from full-flavor products. Defendants knew that the phenomenon of smoker compensation, discussed in greater detail *infra,* would cause smokers to smoke low-delivery products more intensely and more frequently in order to obtain their desired level of nicotine. To feed their addiction, therefore, these smokers would defeat the stated purpose of the lower-delivery products. Nor did Defendants disclose to the FTC that "a major reason that the method could yield misleading data was that nicotine addiction would drive smokers to achieve relatively stable nicotine intakes" and that smokers' "physiological need to obtain nicotine substantially lessens the accuracy of the FTC ratings." According to Dr. Farone, Defendants did not inform the FTC in 1966 "that smokers alter their smoking behavior to get nicotine." Nor did Defendants tell the FTC that people's "smoking behavior was driven by the need to satisfy their nicotine addiction."

2067. There is a dose-response relationship between smoking and lung cancer. That is, the less smoke to which smokers are exposed, the lower their lung cancer risk. The predicate for the development and marketing of lower FTC-yield cigarettes was the expectation that, as a group, smokers of lower FTC-yield cigarettes would be exposed to less smoke.

2068. Because of compensation and the need of smokers to obtain a desired dose of nicotine, they may offset the decrease in their cigarettes' FTC tar and nicotine yields, in whole or in part, by one of two means. First, smokers may engage in so-called "puff" or "within cigarette compensation." This is done by smoking individual, lower FTC-yield cigarettes more intensively by taking bigger puffs, taking more frequent puffs, smoking the cigarette closer to the butt, blocking ventilation holes placed in the filter that dilute the smoke, or other means. Second, they may simply smoke more cigarettes.

2076. Despite the fact that tar deliveries, as measured by the FTC Method, decreased by more than two-thirds between 1954 and 1994, lung cancer in

smokers actually increased.

2077. Compensation behavior is distinct from "individual smoker variation":

> Individual smoker variation refers to the fact that one smoker may smoke cigarettes-either regular or low tar-differently than another smoker, and that the same person may smoke the same cigarette differently on different occasions.... Individual smoker variability relates to the fact that cigarettes are smoked differently by different individuals. This type of variability is separate and distinct from the issue of compensation, which relates to the phenomenon of smokers smoking purportedly low-delivery cigarettes more intensely in order to achieve their particular desired level of nicotine intake.

2078. In its August 1, 1967 press release, the FTC set forth the Commission's understanding of smoker variation:

> No two human smokers smoke in the same way. No individual smoker always smokes in the same fashion. The speed at which one smokes varies both among smokers, and usually also varies with the same individual under different circumstances even within the same day. Some take long puffs (or draws); some take short puffs. That variation affects the tar and nicotine quantity in the smoke generated.
>
> Even with the same type of cigarette, individual smokers take a different number of puffs per cigarette depending upon the circumstances. When concentrating, or talking, the number of puffs is usually less. When listening, or required to listen to another person talking, the number of puffs per cigarette, as well as duration of each puff, usually increases. Smoking rates while reading a book may differ from smoking rates while viewing a television program. The number of puffs and puff duration (as well as butt length) will vary according to emotional state. Some smokers customarily put their cigarettes down in an ashtray where they burn between puffs; other smokers constantly hold cigarettes in their mouths; others hold them between their fingers.

2079. Significantly, the August 1, 1967 press release does not demonstrate a similar understanding of nicotine or addiction. It does not even mention nicotine and does not discuss the fact that nicotine addiction would lead smokers to obtain essentially the same amount of nicotine from so-called low tar cigarettes as they would from regular cigarettes.

2081. Defendants suggested an analogy between the FTC tar and nicotine yields

and automobile gas mileage estimates, intimating that they are both useful, albeit imperfect. As Dr. Henningfield explained, this comparison is not valid:

> [W]e know through that [gas mileage] rating system that if you buy a car with a better gas mileage rating, virtually no matter how you drive it, you're going to get better mileage than a car with a worse rating. But in cigarettes, by just subtle changes in the way you smoke and things that most people don't even know about, the ventilation and the channels and the burn accelerants and all these different tricks, makes those two cigarettes look the same. Thus, for example, when humans smoke Marlboro cigarettes ... Marlboro Lights can yield approximately twice as much nicotine as the Regulars are claimed to deliver by the standard FTC method. Marlboro Ultra Lights can deliver three times their advertised rating and most of the Carlton brands can deliver seven or more times their advertised rating.

2082. Light cigarette descriptors also "are totally different" from the information on food labels and drug labels, because "if you eat the listed serving size of [foods], you will receive the amount of [the constituents] listed on the label.... By contrast, ... the advertised FTC tar and nicotine ratings for cigarettes bear very little relation to the actual dose a smoker can and, in most instances, does receive from smoking that cigarette. The inaccuracy in the FTC ratings is especially pronounced for cigarettes sold as 'light' or 'low tar' by the tobacco companies. This discrepancy is especially serious because it is in the direction of more toxins than advertised."

2084. Compensation has been documented by various scientific methods. Three different kinds of studies are generally used to conduct research on compensation: (1) spontaneous brand switching studies, (2) forced brand switching studies, and (3) cross-sectional studies.

2085. First, spontaneous brand switching studies are longitudinal studies that follow the same group of smokers over a specific period of time. At the start, the study measures the smokers' daily smoke exposure and records the FTC-yield of the smokers' usual brand. Later, at follow-up, the same smokers are re-contacted, at which time the study observes any change in the FTC-yield of the smokers' usual cigarette and again measures the smokers' daily smoke exposure.

2086. Such a study permits estimation of the changes in the daily smoke exposure of those smokers who, over the course of the study, spontaneously and voluntarily switched to cigarette brands with higher or lower FTC yields, as well as any changes in the daily smoke exposure of those smokers who did not change the FTC yield of their cigarette.

2087. Spontaneous brand switching studies, like randomized experiments, may be long term or short term.

2089. There is only one complete, peer-reviewed long-term spontaneous brand switching study, Lynch and Benowitz 1987, "Spontaneous Cigarette Brand Switching: Consequences for Nicotine and Carbon Monoxide Exposure," J. Public Health, 78(9): 1191-1194. The study found:

> a. per cigarette nicotine intake was about the same, comparing smokers who switched to lower FTC-yield cigarettes during the course of the study to their own baseline per cigarette nicotine intake.
>
> b. per cigarette nicotine intake was lower, comparing smokers who switched to lower FTC-yield cigarettes during the course of the study to a similar "control group" of full-flavor smokers who did not switch.

2090. Only daily nicotine intake was actually measured in the study. The per cigarette nicotine values were calculated by dividing daily nicotine intake by the number of cigarettes the smokers reported they smoked per day.

2091. Dr. Benowitz drew this conclusion from his study:

> For smokers who switched to lower yield cigarettes, the analysis of cotinine concentration or carbon monoxide per cigarette showed no change despite the reduction in nominal machine measured yield. Therefore, these smokers obtained the same dose of nicotine and carbon monoxide from each cigarette even though the machine measured yield was lower.

The Benowitz study demonstrated that: "For spontaneous brand switchers, there is complete compensation for each cigarette smoked. As a result, for these smokers, switching from higher to lower yield cigarettes is not likely to reduce the risk of smoking." The evidence that there is no reduction per cigarette by switching to lower tar cigarettes is particularly compelling in light of Dr. Benowitz's testimony that "we do know that on average people who are smoking lower-yield cigarettes smoke the same or even slightly more than higher-yield cigarettes."

2092. Based on this study, Monograph 13 concluded:

> For spontaneous brand switchers, there appears to be complete compensation for nicotine delivery, reflecting more intensive smoking of lower-yield cigarettes.

* * *

> Spontaneous brand-switching studies suggest that there is no reduction in smoke intake per cigarette....

2098. Dr. Benowitz explained that the substantial but incomplete compensation shown in the forced switching compensation studies is likely due to the act of forcing participants to switch brands:

> [S]mokers are switched only for the purpose of the research. Motivation and cigarette acceptability differ from the natural situation of brand switching.... The forced brand switching studies show on average about eighty percent compensation.... Presumably compensation is not complete because the smokers have been switched to cigarettes that were not of their own choosing.

2103. Evaluating all the types of studies as a whole, the evidence demonstrates, at a minimum, that compensation for daily nicotine is substantial if not complete.

d. The Public Health Community Has Concluded that Low Tar Cigarettes Offer No Clear Health Benefit

2105. The 1981 Surgeon General's Report concluded, referring to the FTC Method of measuring tar and nicotine:

> [T]he smoking-machine model is limited in accurately reproducing human smoking behavior.... Smokers, however, are able to take larger, more frequent, and higher velocity puffs than the machines do. It appears that such compensatory adjustments often turn nominally lower ‘tar’ and nicotine cigarettes into higher ‘tar’ and nicotine cigarettes.... Even if the compensations made in smoking a single cigarette are small or nonexistent, smokers can increase their intake of ‘tar’ and nicotine by smoking more cigarettes.

2106. The 1981 Report recognized that there are still “smokers who are unwilling or as yet unable to quit.” As to them, the Report concluded that they “are well advised to switch to cigarettes yielding less ‘tar’ and nicotine, provided they do not increase their smoking or change their smoking in other ways.”

2107. Dr. Burns, an editor of the 1981 Surgeon General's Report as well as “an author, editor or reviewer for each of the annual Reports of the U.S. Surgeon General on the Health Consequences of Smoking since 1975,” concluded that, in

his expert opinion, had the information available to the tobacco industry been available to the scientists preparing the 1981 Surgeon General's Report, that Report would not have drawn the erroneous conclusion that lower tar cigarettes produced lower risk or have made the recommendation that smokers who could not quit were "well advised to switch to cigarettes yielding less 'tar' and nicotine."

2108. The 1981 Report

> did not fully take into consideration the phenomenon of compensation, and how smokers smoke to get a certain amount of nicotine, and will even adjust their smoking behavior to get the amount of nicotine they seek or are accustomed to ... we didn't know in 1981 the extent to which smokers would compensate after switching to a 'low tar' and low nicotine yield product.

2109. Dr. Burns provided the "three principal reasons" that "the traditional epidemiological approaches that were employed at the time of the 1981 Surgeon General's Report" yielded results erroneously suggesting that lower tar cigarettes provided less lung cancer risk:

> (1) "[T]hat people who smoked low-tar and nicotine cigarettes" were smoking them largely "based on the understanding that these cigarettes ... offered less risk." As a result, the people who choose these cigarettes "have different health behaviors" and often "different smoking characteristics" than smokers of higher tar cigarettes, leading to different expectations of health outcomes.
>
> (2) That "very few people in the epidemiologic studies started out smoking low tar and nicotine or even filtered cigarettes." Most smokers who smoke the high-tar cigarettes very intensely are not able to switch down to lower tar cigarettes, whereas people who do not smoke the higher tar cigarettes very intensely, "when they switched to a low-tar cigarette ... may be successful because they didn't have much nicotine intake that they needed to satisfy, and correspondingly they didn't have much tar intake. So the process of switching to low tar and nicotine starts to separate individuals who have different intensities of smoking, different amounts of tar that they are ingesting and, therefore, will have different risks."
>
> (3) That "a substantial fraction of people who switch from high-tar and nicotine cigarettes to low-tar and nicotine cigarettes use increased numbers of cigarettes ... as a mechanism of compensation.... In order to

> control for intensity of smoking, the epidemiologic studies used the number of cigarettes smoked per day as a measure of intensity with the mistaken assumption that people wouldn't change the number of cigarettes they smoked per day. That leads us to underestimate the actual number of cigarettes smoked per day as a measure of exposure in low-tar and nicotine cigarette smokers," because the epidemiological analysis compares people who smoke a higher number of cigarettes per day after switching to a lower tar cigarette to people who smoked this higher number of cigarettes per day of the higher tar cigarette. "That produces an erroneous, or incorrect, perception that switching to [the lower tar] cigarette lowered your lung cancer risk as an individual."

2111. Recent studies, including the National Cancer Institute's Monograph 13 and the 2004 Surgeon General's Report, have confirmed that low tar and filtered cigarettes are no less harmful than conventional delivery and unfiltered cigarettes. The 2001 NCI Monograph 13, "Risks Associated With Smoking Cigarettes With Low Machine Measured Yields of Tar and Nicotine" ("Monograph 13") concluded:

> Epidemiological and other scientific evidence, including patterns of mortality from smoking-caused diseases, does not indicate a benefit to the public health from changes in cigarette design and manufacturing over the last fifty years.... Widespread adoption of lower yield cigarettes in the United States has not prevented the sustained increase in lung cancer among older smokers.... Considering the overall exposure data for individuals selecting their own brands, there is little reason to expect that smokers of low yield cigarettes will have a lower risk of disease than those who smoked higher yield cigarettes.

2115. Extensive research into the relationship between research of biomarkers of nicotine in humans and FTC tar and nicotine yields demonstrates that lower tar cigarettes do not provide a reduction in harm:

> Generally speaking, research using these biomarkers has indicated little, if any, correlation between the FTC-yield of tar or nicotine, and the levels of the biomarkers measured in smokers.... These results suggest that there is little difference in the levels of biomarkers comparing smokers of higher yield tar/nicotine cigarettes and lower yield tar/nicotine cigarettes, as measured by the FTC method. This implies that doses of carcinogens or other toxic materials that smokers ingest have little relationship, if any, to the FTC tar yield. This, in turn, suggests that the gradual reduction in tar yield over the past several decades has not resulted in a reduction in smokers' exposure to carcinogens, and that the

> FTC test method is not informative with respect to lung cancer risk or to the risk of smoking-caused diseases generally.... In fact, evidence with respect to smoker compensation and biomarkers shows that those smokers who switch to "Low Tar" cigarettes modify their pattern of smoking to obtain the same or similar amounts of tar and nicotine as from the "High Tar" cigarettes they used to smoke. The bottom line is that a "Low Tar" label-based brand under the FTC protocol does not mean that a smoker is actually ingesting "Lower Tar" than from any other cigarette.

2116. The conclusions of Monograph 13 and the 2004 Surgeon General's Report-that lower tar cigarettes do not provide a health benefit-"represent[ ] the consensus view of the scientific community on this issue." ... *see also* Benowitz WD, 72:21-24 ("Most authorities are now convinced that there is little if any benefit with respect to health risk to smoking low yield versus regular cigarettes"); (no bates) (U.S. 86657) (Canadian Expert Panel, Putting an End to Deception: Proceedings of the International Expert Panel on Cigarette Descriptors. A report to the Canadian Minister of Health from the Ministerial Advisory Council on Tobacco Control 9) (2001) ("There is no convincing evidence of a meaningful health benefit to either individuals nor to the whole population resulting from cigarettes marketed as 'light' or mild' ").

2120. All the major scientific bodies that have addressed this question in recent years have clearly concluded that lower tar cigarettes provide "no clear benefit" to health:

> I think there's no evidence of clear benefit.... I think the state of the evidence has been well summarized in the reports of the Surgeon General, IARC, the Institute of Medicine, each group that's looked at the question of whether today's lower yield cigarettes are likely to produce-are likely to produce lower risk of lung cancer, has said, you know, no clear benefit.

2145. In sum, there is an overwhelming consensus in the public health and scientific community, both here and abroad, that low tar cigarettes offer no clear health benefit to smokers, have not reduced the risk of lung cancer and heart disease for smokers using them, and have not produced any decrease in the incidence of lung cancer. Moreover, because of the misleading nature of the advertising for low tar cigarettes, smokers who might have quit have refrained from doing so in the belief that such cigarettes reduced their health risks.

2. Based on Their Sophisticated Understanding of Compensation, Defendants Internally Recognized that Low Tar/Light Cigarettes Offer No

Clear Health Benefit [Footnote 27 omitted.]

a. Defendants Internally Recognized that Low Tar Cigarettes Are Not Less Harmful Than Full-Flavor Cigarettes

(1) Philip Morris

2146. A March 1, 1977 Philip Morris memorandum by industry-funded scientist Stanley Schachter to Thomas Osdene, Director of Research, concluded that low tar/low nicotine cigarettes are not less harmful:

> [I]t would certainly seem that the campaign for low nicotine cigarettes is misguided and rests on a set of fallacious premises.... The question is crucial and particularly so in light of ... Ross's evidence that carbon monoxide, hydrogen cyanide, and nitrogen oxide delivery is considerably greater in most of the popular brands of low nicotine filter, [sic] cigarettes than in high nicotine, non-filter cigarettes.... It is ... clear ... that the major body of data that has been used to justify the campaign for low nicotine cigarettes does nothing of the sort.

2147. Dr. Farone stated that Philip Morris's Marlboro full-flavor and Marlboro Lights cigarettes are “essentially identical except for dilution”-i.e., that Marlboro Lights have more dilution, dilution referring to ventilation that dilutes the smoke, particularly when machine-smoked by the FTC method, with ambient air. “[A]s you increase dilution, the toxicity in [the Ames] test increases, which is more likely than not associated with a toxicity increase in smokers.”

2148. In fact, Dr. Farone explained that the very Ames mutagenicity testing that Philip Morris has conducted for the past 25 years, and that “Philip Morris has concluded ... predicts carcinogenicity” has indicated that Philip Morris's Marlboro Lights cigarettes are, as designed, more mutagenic than Marlboro full-flavor cigarettes:

> [I]n the case of Marlboro Lights, the Philip Morris test data that I have reviewed on that level of dilution for equivalent blends indicated that the product design for their Light cigarettes was more mutagenic than the full flavor Marlboro, Marlboro Reds, and therefore predictive of more potential cancer risk. These studies were repeated multiple times over the past 20 years and continue to be repeated to this day. The Philip Morris data, as was used by Philip Morris, was a strong warning that their product design change between a Marlboro Red and a Marlboro Light-increased ventilation-resulted in a potentially more dangerous product.

Philip Morris has not "changed the design of 'Light' cigarettes in response to its studies and knowledge concerning mutagenicity."

(2) R.J. Reynolds

2159. RJR's internal documents show that it, like the other Defendants, has long known that it has evidence that low tar cigarettes are no safer than regular cigarettes.

2160. In May 1980, RJR scientist C.T. Mansfield performed the Ames test for mutagenicity"on the tars from twenty-four domestic brands of cigarettes with various [FTC] 'tar' deliveries," and found "a trend for low 'tar' cigarettes to show higher numbers per mg [of] 'tar,' " indicating that the low "tar" cigarettes caused more mutations.

2161. A September 29, 1992 RJR internal presentation reported that lower tar cigarettes were more likely to cause mutations such as tumors and cancer than higher tar cigarettes. The presentation stated: "Higher tar cigarettes tend to have lower Ames activity ... than lower tar cigarettes."

2162. In 2003, Arnold Mosberg, an RJR scientist, and other RJR scientists (Doolittle and Morgan) reviewed "data [they] have had for decades" (some for more than two decades) to conduct a comparison of the relative harmfulness of lights and full flavor cigarettes, using various tests, including animal skin painting tumorgenicity, rodent inhalation, and Ames mutagenicity studies. The results of these studies indicated that low tar cigarettes do not reduce risk relative to full-flavor cigarettes.

(3) Brown & Williamson

2163. A February 4, 1976 memorandum from Ernest Pepples, B & W Senior Vice President, titled "Industry Response to Cigarette/Health Controversy," reveals Defendants' knowledge that the low tar and filter cigarettes they were marketing as less harmful were not producing less tar and less nicotine to the smoker and were not likely to actually be less harmful:

> The industry has moved strongly toward filtered cigarettes, which have increased from 0.6% in 1950 to 87% in 1975.... This became known as the 'tar derby' of the late 1950's. It was characterized by sharply intensified advertising competition.... The new filter brands vying for a piece of the growing filter market made extraordinary claims.... It was important to have the most filter traps. Some claimed to possess the least tars. In most cases, however, the smoker of a filter cigarette was getting

> as much or more nicotine and tar as he would have gotten from a regular cigarette. He had abandoned the regular cigarette, however, on the ground of reduced risk to health.... The manufacturers' marketing strategy has been to overcome and even to make marketing use of the smoking/health connection.... Thus the 'tar derby' in the United States resulted from industry efforts to cater to the public's concern and to attract consumers to the new filtered brands.... The current duel between True and Vantage and between Carlton and Now are other examples of competitive efforts to capitalize on the smoking/health controversy.

2165. An October 31, 1989 B & W internal memorandum, titled "Objections to Product Innovation Strategy," from Wells to RJ Pritchard, B & W executive and member of the Tobacco Institute's Executive Committee, conceded that "it is not established that the reduction or removal of specific smoke constituents or of smoke constituents across the board, such as in low tar cigarettes, is significant for smoking and health."

2167. As of 2005, B & W's website admits that low tar cigarettes are not safer than regular cigarettes. It states that "despite a dramatic lessening of tar yields, the hoped-for reduction of smoking-related illnesses has not been conclusively demonstrated." Furthermore, the website directs the reader to the National Cancer Institute's Monograph 13, citing its conclusions that "[e]pidemiological and other scientific evidence, including patterns of mortality from smoking-caused diseases, does not indicate a benefit to public health from changes in cigarette design and manufacturing over the last fifty years," and that "[w]idespread adoption of lower-yield cigarettes in the United States has not prevented the sustained increase in lung cancer among older smokers."The website further states: "[W]e continue to believe that smokers should rely on the public health authorities' views on low tar cigarettes and other smoking issues."

(4) BATCo

2168. A 1976 BATCo document from S.J. Green to P.L. Short and P. Sheehy revealed both that BATCo planned to market low tar cigarettes as safer and that BATCo did not have a sufficient basis to believe that low tar cigarettes were safer, stating: "Before we do work aimed to sell low delivery cigarettes, unless we are already satisfied, we should do some work to establish that in fact they are safer."

b. Internally, Defendants Had an Extensive and Sophisticated Understanding of Smoker Compensation

2173. Defendants have known since at least the 1950s that the central

component that drives the smoking habit is nicotine, an addictive substance. Accordingly, Defendants also have long been aware that the reason people smoke cigarettes is to obtain a sufficient "dose" of nicotine to sustain their addiction.

2174. Defendants also have known since the 1960s and 1970s that, because smokers smoke to obtain the desired effects of nicotine, smokers of lower-yield cigarettes tend to adjust their smoking behavior to titrate *(i.e.*, control) their nicotine intake of nicotine to achieve the necessary levels of nicotine. That adjustment or titration of nicotine levels is called compensation. Defendants' internal understanding of compensation was decades ahead of that of employees and scientists of the Government and the scientific community. See Section V(B)(2)(b), *supra.* According to Dr. William Farone, Philip Morris employee from 1976 to 1984, who served as Director of Applied Research, and was accepted as an expert in "the chemistry and biochemistry of alkaloids and addictive drugs, the chemistry and physics of cigarette smoke, cigarette design and technology, and the chemistry and biochemistry of toxic substances and how they interact with living systems," during his employment at Philip Morris, the company had "a greater understanding of compensation than the outside scientific community," and, in his expert opinion, "the same is true for the other tobacco company Defendants." In 1966, when the FTC was considering the FTC Method, Defendants knew "that smokers smoked for nicotine" and "that smokers alter their smoking behavior to get nicotine."

2175. When Dr. Farone was Director of Applied Research, Philip Morris's own research found that "if we adjusted the design to reduce the nicotine delivery, or if people were given a cigarette of lower nicotine delivery than their usual brand, smokers would 'compensate'-change how they smoked-to get the amount of nicotine they need." ...*see also* Farone WD, 104:7-15 (testifying that he knows Philip Morris was aware of compensation for nicotine "[f]rom conversations that I had with many of my colleagues at Philip Morris while I was working there, including people working under Dr. Dunn in his behavioral research group," and that this knowledge "is evident from the company's own documents").

(1) Philip Morris; see findings 2176 through 2200

(2) R.J. Reynolds, see findings 2201 through 2205

(3) Brown & Williamson, see findings 2206 through 2211

(4) BATCo, see findings 2212 through 2224

(5) American Tobacco, see findings 2225

3. Defendants Internally Recognized that Smokers Switch to Low Tar/Light Cigarettes, Rather than Quit Smoking, Because They Believe They Are Less Harmful

2230. The evidence shows that even though low tar smokers may have a greater desire to quit, the misperception of increased safety associated with low tar cigarettes persuades them to avoid quitting. Research shows that most low tar cigarette smokers have made a greater number of quit attempts than smokers of full flavor cigarettes, or were more likely to have considered quitting.

2231. Many smokers who were concerned about the risks of smoking responded by switching to low tar cigarettes instead of quitting.

2232. "There is profound harm" for people who smoke low tar cigarettes. As Dr. Burns explained:

> The vast majority of people who smoke are addicted. They're interested in quitting but are unable to do so.... To provide smokers an alternative that says you don't have to quit, you can use this other type of cigarette, to intercept them on the way to quitting smoking is a profound harm because they continue to smoke longer than they might have otherwise. Some of those people who switched might have ... been successful in quitting, and when they did that, they would have in actuality reduced their disease risks. And those individuals have been profoundly harmed.

2233. The 2004 Report of the Surgeon General noted that "[r]esearch has demonstrated that with the expectation of reducing risk, many smokers switched to low machine-measured tar/nicotine cigarettes, and may thus have been deterred from quitting". NCI Monograph 13 noted that "substantial numbers of smokers" switched to cigarettes with lower machine-measured tar yields "in an effort to reduce their disease risks," and that "[t]he switch to low machine-measured-yield cigarettes with the illusion of risk reduction was, therefore, substituted for a real risk reduction that would have occurred had the smoker quit smoking altogether."

2234. As demonstrated below, Defendants conducted extensive research on quitting to help them identify and understand potential quitters *(i.e.*, smokers who were "concerned" and "uncomfortable" with the fact that they smoke) and design marketing that would dissuade them from quitting. Defendants' internal documents demonstrate their recognition that smokers interested in quitting smoking were instead switching to low tar cigarettes under the mistaken belief that doing so would either help them quit or be better for their health.

2235. For example, a 1987 National Health Interview Survey showed that 44% of current smokers had, at some point, switched to low tar cigarettes to reduce their health risk. Correspondingly, another national survey showed that 58% of ultra light smokers and 39% of light smokers chose those cigarettes to reduce their health risks without having to quit. Furthermore, 49% of ultra light smokers and 30% of light smokers did so as a step toward quitting. Finally, the 1993 Teenage Attitudes and Practices Survey showed that 21% of light or ultra light cigarette smokers chose those brands because they perceived them to be healthier.

2236. According to Dr. William Farone, former Director of Applied Research at Philip Morris, one reason that low tar cigarettes "are more dangerous" than full-flavor cigarettes is that "they lead people to believe they are [safer] so that they smoke them in manners that cause them to get just as much toxins."

2237. Dr. Farone explained that:

> The problem is that when people see that word "light," it is my opinion that they believe it's safer and, in fact, it isn't, so that's what this is all about ... they are more dangerous because people are smoking them thinking they are doing themselves some good, they think they are safer ... there is no benefit to a smoker from Marlboro Lights compared to Marlboro. That's the main point. So that makes it more dangerous.

2238. Smokers of light and ultra light cigarettes are more concerned about the risks of smoking than smokers of full flavor cigarettes. A 1986 CDC control study showed that 85% of those who switched from full flavored cigarettes to light or ultra light cigarettes were concerned about the health risks of smoking, as compared to 70% of full flavor smokers. Ultra light smokers are also more likely to use tar numbers in judging the relative risk of cigarettes. A study showed that 56% of ultra light smokers rely on tar numbers to determine cigarette safety, as compared to 14% of the overall sample. Moreover, 83% of the ultra light smokers believed that switching from a 20 mg to a 5 mg cigarette would significantly reduce health risks, whereas 50% of other smokers shared that same belief.

a. Defendants Recognized that Smokers Choose Light/Low Tar Cigarettes for a Perceived Health Benefit

2239. Defendants have stated publicly that they produce low tar cigarettes only to accommodate consumer taste preferences for "lighter," "milder" tasting cigarettes, and that they do not intend their use of brand descriptors or their marketing of low tar cigarettes to imply a less harmful product. See Section

V(E)(5), *infra* (discussing Defendants' false statements regarding their low tar cigarette marketing). Contrary to their public statements, however, Defendants' internal marketing documents establish that Defendants have known for decades that even though consumers prefer the taste of regular cigarettes to low tar cigarettes, they are willing to forgo them and smoke low tar cigarettes, which are less enjoyable and have a less appealing taste, because they believe low tar cigarettes are better for their health.

(1) Philip Morris, see findings 2240 through 2261

(2) R.J. Reynolds, see findings 2262 through 2270

(3) Brown & Williamson,see findings 2271 through 2279

(4) BATCo, see findings 2280 through 2285

(5) American Tobacco, see findings 2286 through 2290

b. Defendants Internally Recognized that Smokers Rely on the Claims Made for Low Tar/Light Cigarettes as an Excuse/ Rationale for Not Quitting Smoking

(1) Tobacco Institute

2294. A May 1978 Tobacco Institute document, titled "A Study of Public Attitudes Toward Cigarette Smoking and the Tobacco Industry in 1978 Volume I," prepared for the Tobacco Institute by the Roper Organization stated that

> low tar cigarette smokers ... are potential cigarette quitters.... And more of them than the average have tried to quit smoking. Since low tar smokers are an expanding share of the market, their greater desire to quit smoking poses a special problem for the cigarette industry.

(2) Philip Morris

2295. Philip Morris conducted research on former smokers to assist it in marketing purportedly less harmful cigarettes to draw them back into the market and to dissuade potential quitters from actually quitting. According to Carolyn Levy, who worked as a research scientist for Philip Morris in its Behavioral Research Group from 1975-1980 and as the Assistant Director and later Director of Consumer Research from 1986-1991, when she was in the Consumer Research Department, she "performed research on quitting on behalf of Philip Morris," and when she was in the Behavioral Research Department in the late

1970s, "[q]uitting was also a subject of interest and research to Philip Morris."

2296. A report titled "Exit-Brand Cigarettes: A Study of Ex-Smokers,"written by F.J. Ryan and approved by Dr. William Dunn, dated March 1978 and distributed to certain Philip Morris employees, including Levy, stated: "If the industry's introduction of acceptable low-nicotine products *does* make it easier for dedicated smokers to quit, then the wisdom of the introduction is open to debate." The report further stated that "experience in dealing with 'quitters' suggests that most people who quit smoking will resume after a while. Hunt and Matarazzo show data suggesting that 50% of quitters resume smoking within 3 months and 70% resume within a year." Levy said that she was "aware when [she was] studying quitters that most quitters resume smoking."(emphasis in original).

2298. An August 14, 1978 consumer research report prepared for Philip Morris by Wells, Rich, Greene, Inc. regarding Benson & Hedges stated:

> Those who are currently smoking "Lights" do so because "... they are better for you ..." than full flavor cigarettes. Although some experience that they actually smoke more Lights, they perceive that they are cutting down and it is an alternative to quitting-which most cannot accomplish.

2299. A January 1979 study prepared for Philip Morris stated:

> [W]ith respect to ultra low tar brands there appear to be particular additional motivations for smoking this type of cigarette ... [h]ealth problem forcing a change to a safer cigarette (as an alternative to not being able to quit) ... [p]eer and family pressure to smoke a safer cigarette (as an alternative to not being able to stop smoking).... Characteristics of ultra low tar smokers were: people who want to quit.... In point of fact, smoking an ultra low tar cigarette seems to relieve some of the guilt of smoking and provide an excuse not to quit. All of these smokers expressed an awareness of a health hazard from smoking, but felt that they had alleviated some of this hazard by smoking an ultra low tar brand. They described these cigarettes as 'safer'.... With these justifications, there may be less of a compulsion to quit smoking....

2300. A March 1979 report prepared for Philip Morris, titled "A Study of Smokers' Habits and Attitudes With Special Emphasis on Low Tar and Menthol Cigarettes," stated:

> The percentage of adults who smoke has stabilized for the first time since 1965-at 34%. This could well be due to the greater perceived safety of

> low tar cigarettes and their resultant neutralization of the health threat.... The number of cigarettes smoked per day per smoker continues to climb, in part at least because low tar cigarettes seem to cause people to increase the number of cigarettes they smoke.

2302. Philip Morris conducted a "major study" on quitting in 1988, titled "Critical Issues -1988 Progress Report," which Levy described in a September 26, 1988 memorandum she sent to John Zoler, then Director of Market Research. Under the heading "Smoker Dynamics," Levy wrote: "Conducted a major study on quitting showing: demographics of quitters, quitting by brand, reasons for quitting, methods used to quit, substitutes used for cigarettes." There were 506 people surveyed in the Philip Morris study, and "[t]he research results indicated that the number one reason for people quitting smoking was health concerns."

2304. A March 1993 Philip Morris document, titled "Quitting Dynamics," showed statistics from "Smoker Tracking" that indicated that more Low Tar smokers did not try to quit (53.5%) compared to Full Flavor smokers (43.2%).

2305. In a July 1993 Philip Morris presentation, titled "Merit Franchise," prepared by Norma Suter Drew, Brand Manager and Marketing Director for Merit cigarettes from 1992-1994, she reported that the "Intended Audience" of Merit advertising was "self-conscious low tar smokers who want to cut down on tar and nicotine but who won't sacrifice taste completely." ...*accord* 2041453659-3754 at 3678 (U.S. 23906) ("Merit's consumers are self-described 'Uncomfortable Smokers' who tell us they are self-conscious about the fact that they smoke")....

2307. Philip Morris's 1994-1998 Plan Overview stated:

> If ultra low tar segment growth accelerates, we will launch Marlboro Ultra Lights to prevent Marlboro from losing smokers. Marlboro Ultra Lights will reinforce Marlboro's appeal among tar 'conscious' Lights smokers and improve Marlboro's ability to retain smokers as they age.

2310. In August 1996, Natalie Ellis, Senior Manager at Philip Morris, and Urvashi Kohli distributed a June 1996 consumer research study, titled "Marlboro Ultra Lights: A History," to a long list of Philip Morris employees, including Norma Suter Drew, then Director of New Products for Marlboro, gauging consumer reactions to the contemplated launch of Marlboro Ultra Lights. The study found that Marlboro Red smokers see Marlboro Ultra Lights as "a brand for quitters and people who are trying to cut down."

2311. In an October 4, 1999 letter, titled "Schedule for Merit Competitive Lights and Ultra Lights Study," Beth Hooper of Leo Burnett discussed an upcoming Philip Morris study being conducted to "[e]xplore adult smoker attitudes toward the Lights/Ultra Lights category" and to "[b]etter understand the impact of Marlboro Ultra Lights on the category overall." Under the heading "Background," Hooper noted:

> The dynamics of the Lights/Ultra Lights category have changed significantly over the past several years, particularly with the entry of Marlboro Ultra Lights. In the past, Lights and Ultra Lights were stops on the way to leaving the tobacco category. However, today, we are seeing that both segments are the destination of choice for many adult smokers.

2312. According to Jeanne Bonhomme, Director of Consumer Insights for Philip Morris, the company was aware that some "consumers who wanted to quit were switching to several of its light cigarette brands instead of quitting."

(3) R.J. Reynolds

2313. A 1969 RJR Survey of Cigarette Smoking Behavior and Attitudes recognized that "[a]s a group filter cigarette smokers were more conscious of a possible relationship between smoking and health," and recognized the "willingness of an increasing number of smokers to compromise-to smoke what they considered to be a less harmful cigarette rather than give up smoking entirely."

2316. In discussing RJR's Limit, a new low tar cigarette, a 1976 memorandum noted that "LIMIT will satisfy the needs of smokers who wish for the ultimate in low 'tar' assurance-providing the strongest health reassurances available in cigarettes today." Under the heading "Target Audience," the memorandum stated:

> The extreme worriers. That large group of smokers on the fringe of quitting who are on the verge of that final step: quitting smoking all together. This enormous group of smokers of various ages who have unsuccessfully tried to quit. Our target group will also include smokers whose concern with the health implications of smoking surpass their needs for full flavor in a cigarette.

2317. An August 19, 1976 RJR document, titled "New Product/Merchandising Directions," stated that the

> "worrier" segment of the market (17% of smokers are so classified) ...

> seek products with tangible/visible features to assuage their "concern" about smoking. "Numbers" products have a growing appeal to these smokers. Products in the 1-6 mg. "tar" range will continue to build successful long-term franchises (e.g., Carlton's growth rate, NOW's immediate acceptance).

2318. An August 5, 1980 RJR memorandum marked "RJR SECRET" from M.D. Shannon to Dr. W.M. Henly and Dr. R.A. Lloyd (all three were RJR researchers), titled "Project HR," stated:

> ULT ["Ultra Low Tar"] smokers.... Very health conscious-These smokers are well aware of the smoking and health controversy and have switched to ULT products in an effort to decrease "tar" intake. Many of these smokers are victims of pressure from peers and loved ones to quit or reduce smoking. Therefore, they smoke ULT brands to "get people off their backs...." Feelings of guilt about smoking are very strong.... Many would like to quit smoking but cannot. This tends to fuel their low self-esteem.... These smokers do not feel good about themselves. [S]everal concepts were developed to appeal to these smokers: 1. To convince the HR target that the new brand represents a payoff or reward for his forced decision to sacrifice by going down in "tar" level.... 2. To convince the HR target that the new brand is a reflection of his rational, sensible decision to switch to a low "tar...." Again an attempt is made to make him feel better about smoking.... Advertisements were developed ... to address these concepts and present them in a manner that would be positively received by the target audience.

2321. A November 3, 1998 e-mail from Mario Possamai to Randy Tompson, then Director of Issues and Information Management for RJR, discussed the results of an October 20, 1998 Gallup Survey regarding quitting behaviors and motivations. The survey found that "the number of smokers who are very interested in quitting has increased dramatically in the last five years," specifically noting that 36% of all current smokers are "very interested" in quitting. Health concerns were cited as the primary reason smokers want to quit, with 43% of smokers reporting that they were more concerned about health than they were five years earlier. Although 77% of smokers had tried to quit an average number of seven times each, more than half (54%) of smokers reported resuming smoking within one month. Over half of all smokers (53%) smoked light, low-tar or ultra-light cigarettes. According to the survey, "many of these smokers believe that they will get some health benefit from smoking non-regular cigarettes, including: 'to be healthier/improve health' (11 percent), 'reduce exposure to toxins/tar' (10 percent), and 'reduce exposure to nicotine' (9 percent)."

(4) Brown & Williamson

2322. A January 19, 1978 memorandum from Dr. E.F. Litzinger to E.T. Parrack, with copies to Dr. R.A. Sanford and M.L. Reynolds, titled "Social Smoking Studies," stated:

> We search for answers to the questions "Why do people smoke?" and "Why do people stop smoking?" to provide us with direction in developing new products. Perhaps answers to another question "How do people stop smoking?" could lend insight into the creation of new products. Having answers to this latter question we might then design products to "intercept" people who are trying to give up smoking.

2323. A February 7, 1979 letter from Stephen D. Schwartz of Grey Advertising Inc., stated that ultra low tar smokers of brands like B & W's Carlton and RJR's Now, have "consciously decided to sacrifice taste for low tar," and that these smokers "want a way to quit smoking."

2327. A 1986 B & W document stated: "Quitters may be discouraged from quitting, or at least kept in the market longer.... A less irritating cigarette is one route.... (Indeed, the practice of switching to lower tar cigarettes and sometimes menthol in the quitting process tacitly recognize this). The safe cigarette would have wide appeal."

(5) BATCo

2330. A March 22, 1979 internal BATCo document written by Terry Hanby, who researched "Smoking & Health reassurance" for BATCo, concluded that the sale of low tar cigarettes as "health reassurance" products would stem the decline in cigarette sales:

> It is quite clear that the emergence of Hi-Fi products has been welcomed by much of the smoking community and their use is emerging as an important health reassurance mechanism for many smokers.... [T]he growth of Hi-Fi brands will increasingly ensure that up-market smokers will turn to them as a health reassurance mechanism.... [W]e feel that in the markets of 'developed nations' the incidence of smoking may continue to decline but that the various reassurance mechanisms listed above will ensure that this decline will eventually plateau at a level not too far removed from current incidence levels.

2331. A BATCo memorandum dated April 4, 1979, titled "Year 2000," contained predictions for the future of the tobacco industry:

> Low tar products will eventually and substantially define the tobacco business. This will serve as an important mechanism for reassuring smokers.... Quitting rates will also not increase as existing smokers become increasingly reassured by the growth of Low Tar brands .... the ready availability of Low Tar brands will supply high reassurance.

2332. An April 23, 1979 BATCo Research Report concluded that "most smokers wish to quit smoking."

(6) American Tobacco

2340. A November 11, 1976 report prepared by Fay Ennis Creative Research Services for F. William Free & Company, an advertising agency used by American Tobacco, summarized focus group sessions relating to low tar cigarettes. The report stated: "By changing to a lower tar cigarette, [the panelists] felt less guilty about continuing to smoke and eventually hoped to stop smoking completely." The report stated that "[s]ome of the panelists actually tried smoking brands of low tar in a downward progression of milligrams in order to quit smoking entirely."

4. Despite Their Internal Knowledge, Defendants Publicly Denied that Compensation Is Nearly Complete and that the FTC Method is Flawed

2346. Despite evidence spanning multiple decades showing Defendants' extensive knowledge of compensation, Defendants concealed that knowledge and disseminated false and misleading statements to downplay its existence and prevalence. As part of their attempt to portray low tar cigarettes as less harmful, Defendants publicly endorsed retaining the FTC Method well into the 1990s because of its usefulness to consumers.

2347. As Defendants knew, the smoking regimen used in the FTC Method was designed to approximate smoking behavior in the 1930s, when cigarettes were relatively simple devices: few had filters, and perforated filter ventilation cigarettes were not in production.

2348. When the FTC Method was adopted, it was understood that, while it was intended to provide a useful measure of the amount of tar and nicotine that particular brands generate when smoked in a uniform fashion, so that smokers could compare brands, the standardized FTC Method-or any standardized testing procedure for that matter-would not totally accurately represent the amount of tar and nicotine that any particular smoker would ingest.

2349. As noted in Section V(E)(1)(c), *supra*, while the FTC contemplated at the

time it adopted its Method that numerous potential variations among individuals in everyday smoking behavior could have some effect on tar and nicotine yields, it did not have a full understanding of smoker compensation-that smokers' addiction to nicotine would cause them to smoke low tar cigarettes more intensely to satisfy their nicotine addiction, and thereby inhale amounts of tar and nicotine comparable to those inhaled by smokers of full flavor cigarettes. Defendants withheld their long-held knowledge that the primary reason the FTC Method could yield misleading data was that nicotine addiction would drive smokers to obtain relatively stable nicotine intakes through smoker compensation.

2350. When the FTC Method was adopted, the Tobacco Institute offered several criticisms in an August 1, 1967 press release, but none of those criticisms related to smoker compensation. Instead, the Tobacco Institute criticized the number of cigarettes tested, the length of the cigarette smoked, and the lack of dissemination of tar yields per cigarette puff. The Tobacco Institute stated that "there is no valid scientific evidence to show that ... 'tar' and nicotine [ ] are responsible for any human illness" and then proposed several changes to the FTC Method, most of which were based on claims that FTC tar and nicotine yields were inaccurately high. The Tobacco Institute argued that twice as many sample cigarettes should be tested to arrive at FTC yields, that the FTC Method should use a longer butt-length (which would have lowered FTC tar and nicotine yields by smoking less of the cigarette), and that tar and nicotine yields should be disclosed on a per-puff, as well as a per-cigarette, basis. For these reasons, the Tobacco Institute claimed that the FTC Method "may be deceptive because a smoker may assume his cigarette is delivering the amount of 'tar' and nicotine reported by the FTC when in fact it will be delivering much less, the way he smokes."

2351. Even at the time it was developed, scientists understood that the FTC method, like any standardized method, would provide an imperfect measure of the exact amount of tar and nicotine that a particular smoker would ingest from a particular cigarette. Instead, the method was intended to give representative approximations of the amounts of tar and nicotine generated by different brand cigarettes when smoked under identical conditions. Those approximations could then provide a useful comparison of the tar and nicotine a human smoker would receive from smoking different brands. For example, the FTC stated in 1983: "If consumers avoid blocking ventilation holes, cigarettes smoked in the same fashion will yield 'tar', nicotine, and carbon monoxide in general accordance with their relative FTC rankings." While the FTC Method does provide a means by which to compare brands, the comparison does not meaningfully relate to the reality of smoking.

2352. In a November 29, 1994 written statement submitted for the December 5-6, 1994 NCI Conference on the FTC Cigarette Test Method, B & W, American Tobacco, Lorillard, and Liggett defended the FTC Method, stating that "The FTC's Test Method Provides Useful and Reliable Information About the Relative 'Tar' and Nicotine Yields of Cigarettes," and contending that FTC yields are a "useful predictor" of the amount of tar and nicotine smokers will inhale.

2353. RJR employees, David Townsend and Donald de Bethizy, maintained at the same Conference, in both their written and oral statements, that the FTC Method was a valid and accurate test method that approximates human smoking.

2354. In his written statement, Townsend asserted that the FTC Method "provides accurate and reliable information" that "is a key factor for consumers to make objective choices in the marketplace" and stated that "implementation of the FTC testing for 'tar' and nicotine ... was an important step in providing data for the consumer to use to make an informed decision in the marketplace." Townsend further stated that

> it is clear from the information, I believe, that the FTC test method does provide accurate and reliable information for the consumer to use in the marketplace; that is, to compare yields of various brands and make objective choices. The consumer makes choices based on the FTC information, or the rankings derived from that information.... The FTC method was established to provide accurate and reliable comparative smoke yield information, and has been very successful in doing that.

2355. De Bethizy stated: "The FTC method provides an accurate and meaningful ranking of cigarettes.... On average, smokers absorb approximately the yield of nicotine predicted by the FTC method, and smokers of lower yielding products absorb less nicotine ...." He also stated: "The FTC method provides an accurate and meaningful ranking of cigarettes.... [T]he compensation phenomenon does not undermine the FTC method."

2356. In their 1996 comments on the FDA's proposed tobacco Rule, Defendants continued to maintain that there is a meaningful relationship between the FTC ratings and smoker tar and nicotine exposure.

2357. While defending the FTC Method and resisting proposed changes to it, Defendants have made repeated public assertions that they have substantially reduced the tar and nicotine deliveries of cigarettes, citing the FTC ratings as their primary support for this assertion. 2505597781-7998B at 7987-88 (U.S. 23028*) (1996 Comments of B & W, Liggett, Lorillard, Philip Morris, Inc., RJR

& Tobacco Institute before the U.S. FDA, Vol. III) (claiming that "over the years, the average yield of cigarettes generally has declined markedly.... The fact is that from 1950 to the present, U.S. cigarette manufacturers have reduced 'tar' and nicotine yields by more than 60 percent"); 2046932308-2363 at 2314-2315 (U.S. 85067) (Philip Morris 1994 submission to NCI regarding the FTC Method, asserting "an overall decrease in the 'tar' and nicotine intake of smokers" as a result of reduced FTC yields); 521321297-1301 at 1299 (U.S. 22137) (1994 RJR employee's statement that "all cigarettes are substantially lower in 'tar' yields than they were in past years" and his claim that "[c]igarette design changes have resulted in an overall major reduction in smoke yields.").

2359. Over the years, there has been discussion in the scientific community about revising the FTC Method to make it a more accurate measure of the tar and nicotine that human smokers actually ingest. Defendants have opposed changing the FTC Method, arguing that it provides a way for consumers to choose cigarettes and meaningfully compare them in terms of the tar and nicotine exposure from smoking.

2360. For instance, in September 1997, the FTC solicited public comment on a proposal to replace the existing FTC test method with a methodology that would "provide information on the tar, nicotine, and carbon monoxide yields obtained under two different smoking conditions" to provide "a range of yields for individual cigarettes smoked under less intensive and more intensive smoking conditions," and to convey to smokers that "a cigarette's yield depends on how it is smoked." In response, Philip Morris, RJR, B & W, and Lorillard submitted joint comments to the agency defending the current FTC Method and opposing the proposed change, stating: "The manufacturers believe that the current test method should continue to be used. They are not convinced that it should be supplemented with a second test method."

2361. The comments further stated that: "Smokers are familiar with the ratings produced by the current test method, and continued use of the current test method assures historical continuity of the data. For these reasons, testing under the current FTC test method should continue." The comments referred to compensation as a "hypothesized" and "weakly documented phenomenon" and stated: "The testing protocol should not be modified to reflect 'compensatory' smoking", in part because "current knowledge about these behaviors is too sparse to be usable for modeling purposes."

2362. Defendants' comments urged that "[t]he protocol should not be modified to incorporate a vent-blocking condition." In response to the FTC's question: "What kinds of consumer education messages should be created to inform smokers of the presence of filter vents and the importance of not blocking them

with their fingers or lips?" Defendants' 1998 comments stated: "The manufacturers are not convinced that vent-blocking is a sufficiently common or documented phenomenon that smokers should be alerted to the presence of filter vents and instructed not to block the vents."

2363. In response to the FTC's question: "If the effect of compensatory smoking behavior is not incorporated in the tar and nicotine ratings, should a disclosure warning smokers about compensatory smoking behavior be required in all advertisements?" Defendants' 1998 comments stated: "The manufacturers are not convinced that compensatory smoking behavior is a sufficiently common or documented phenomenon that consumers should be alerted to its existence...."

a. Tobacco Institute, see e.g., finding 2364

b. Philip Morris, see e.g. findings 2365 through 2368

c. R.J. Reynolds, see e.g., findings 2369 through 2370

d. Brown & Williamson, see e.g., findings 2371 through 2372

e. BATCo, see e.g., finding 2373

f. American Tobacco, see e.g., findings 2374 through 2375

5. Despite Their Internal Knowledge, Defendants' Marketing and Public Statements About Low Tar Cigarettes Continue to Suggest that They Are Less Harmful than Full-Flavor Cigarettes

2377. As detailed below, Defendants made, and continue to make, false and misleading statements regarding low tar cigarettes in order to reassure smokers and dissuade them from quitting. These actions include: assertions that low tar cigarettes deliver "low," "lower," or "less" tar and nicotine than full-flavor cigarettes; claims that low tar cigarettes are "mild" or deliver "clean" taste; and use of brand names with descriptors such as "light" and "ultra light," with full knowledge that consumers interpret these claims and descriptors to convey reduced risk of harm.

2378. Low tar cigarettes have captured an enormous share of the total cigarette market. The percentage of low tar cigarettes (*i.e.*, cigarettes with an FTC-reported tar yield of 15 mg. or less) has increased from 2% in 1967 to 81.9% of total cigarette sales in 1998.

2379. From the 1960s to the present, Defendants' marketing of their health

reassurance brands has featured claims of lowered tar and nicotine accompanied by written statements that implied a health benefit as a result of the lowered tar levels. Defendants have also used marketing imagery, such as lighter color cigarette packaging and white tipping paper, to communicate to smokers that Defendants' health reassurance brands were “lighter” and lower in tar.

2380. Over the last five decades, Defendants have not only introduced numerous standalone cigarette brands that purport to be low in tar (*e.g.*, Merit, Vantage, and Carlton), but have also introduced low tar “brand extensions” of existing full flavor cigarette brands (*e.g.*, Marlboro Lights and Ultra Lights as extensions of the full flavor Marlboro brand). Defendants have used so-called brand descriptors such as “light,” “medium,” “mild,” and “ultra light” to market both their new brands, as well as their brand extensions as low in tar. Virtually every major brand undertook line extensions and by 1980 over 50% of cigarettes sold were “low tar” (with an FTC Method tar yield of 15 mg or less). Defendants acknowledge that, today, every major manufacturer continues to manufacture and sell low tar brands and brand extensions in both the “light” and “ultra light” categories.

2381. Although the FTC does not formally classify cigarettes according to tar or nicotine yield, industry practice, according to Denise Keane, Philip Morris General Counsel, has long been to apply the “light” descriptor to cigarettes with 7 to 14 milligrams of tar, and the “ultra light” descriptor to cigarettes with fewer than 7 milligrams of “tar.” These brand descriptors “have been developed by cigarette manufacturers through their advertising.” ...*accord* Henningfield WD, 56:8-11 (testifying that the FTC has no “control over which cigarettes Defendants advertise as ‘light’ or ‘ultra light’ ”).

2382. The terms “Light” and “Low Tar,” as they are used by Defendants, are essentially “meaningless” and “arbitrary.” As Dr. Farone explained:

> [T]here are lights of certain brands with higher tar levels than regulars of other brands from the same company, and there are also lights and regulars of the same brand that have the same FTC tar rating. So therefore the term “light” is not related to tar or taste. For example, according to the most recent FTC report of tar and nicotine yields, Philip Morris sells versions of Virginia Slims and Virginia Slims Lights that both deliver 15 mg of tar by the FTC method.

2383. The FTC's 1967 report to Congress concluded that Defendants were using the word “mild” in advertising “as a euphemism for cloaking the dangers of increased cigarette smoking.” The Report noted, in particular, the following ads:

> Carlton filters have "Good mild taste ... created for those who are interested in the amount of tar and nicotine in the smoke of their cigarette...." "Montclair (menthol filter) cigarettes are made especially for smokers who seek exceptional mildness...." "You get Pall Mall's famous extra length of fine tobaccos ... and a filter tip. Result? A new longer length, a full 100 millimeters long and a new milder taste ..." and "(Chesterfield kings) made to taste even milder through longer length."

2384. In its 1968 report, the FTC concluded that Defendants' use of the phrase "mild taste" in advertising is just another way to communicate the term "less harmful" to smokers:

> Advertising in 1966 featured the phrase "mild taste" to describe the satisfactions obtained from smoking and also as a euphemism to cloak the dangers of cigarette smoking. The euphemistic effect derives from the possibility that the public assumes "mild" tasting cigarettes to be less strong, i.e. lower in tar and nicotine than many cigarettes, and hence less hazardous.

2385. The 1971 FTC report noted that "[r]elieving anxieties about the risks to health posed by cigarette smoking" was among Defendants' three main advertising themes and that "[c]laims of low tar and nicotine content present yet another appeal to relieve concern about the dangers to health associated with cigarette smoking." In 1975 and 1976 reports, the FTC reported that this theme, used separately or with themes regarding taste or desirable personality characteristics, "continued to predominate in 1975," and "continued to dominate in 1976, with little variation in format and copy except in the greatly increased promotional emphasis given to the lower and lowered 'tar' varieties."

2386. The 1981 FTC report on cigarette advertising noted, many of Defendants' advertising campaigns had, over the course of the preceding four decades, "impl [ied] that smoking a particular brand solves the health problem or at least minimizes the risk." The report noted that Philip Morris's Parliament and American Tobacco's (subsequently B & W's) Tareyton cigarettes "imply that their special filters minimize the risks of smoking." The report also cited the advertisements for RJR's Vantage, B & W's Viceroy, and Lorillard's True cigarettes as examples of advertising campaigns implying that the brands marketed are either not harmful or less harmful.

2387. Similarly, the 2001 Institute of Medicine report cited the advertisements of Defendants Philip Morris, RJR, B & W, American Tobacco, Lorillard, and Liggett as examples of advertisements that relate health benefits to particular low tar cigarette brands.

2388. The FTC noted in a 1976 report that "[t]he lower and lowered 'tar' and nicotine cigarettes have in the last year been the subject of an intensive promotional effort by cigarette manufacturers." Defendants' spending on the advertising and marketing of low tar cigarettes (*i.e.*, cigarettes yielding 15 mg. or less tar per the FTC Method) has been disproportionately high compared to their domestic market share. The FTC's report for 1997 revealed that for every single year from 1967 to 1992. Defendants' advertising and promotional spending for low tar cigarettes exceeded their domestic market share. According to one marketing expert, low tar cigarettes came to "substantially reshape and define the cigarette market," explaining that:

> [T]he real "boom: time for these cigarettes is the late 1970s". In 1974, manufacturers devoted about 15% of their advertising and promotion dollars to these products. By 1979, this spending grew to 67%. At the time, the percent of sales represented by low tar was only 30%, so spending was disproportionately high on these "health reassurance" brands. These products, which accounted for less than 15% of cigarette sales in 1975 came to hold the majority of the market by 1981.

It was not until the mid-1990s that the percentage of sales made by low tar brands finally equaled the amount that Defendants were spending to promote them, which was about 70% of the industry total.

2389. According to Dr. Henningfield, who among his many other credentials headed the National Institute of Drug Abuse from 1994 to 1996, smokers are not always familiar with the FTC rating of their cigarette, but are aware of whether their cigarettes are "light" cigarettes or "regular." There is little, if any, dispute that consumers believe that "light" cigarettes deliver less tar and nicotine than regular cigarettes, and that consumers believe that regular cigarettes are more hazardous than "light" cigarettes.

2390. Relatively few people understand that smoking low tar or light cigarettes can be -and often is-just as dangerous as smoking full flavor cigarettes. A peer-reviewed, published study showed that 70% of low tar cigarette smokers believe that such cigarettes decrease one's daily intake of tar. Similarly, another study showed that approximately half of all respondents did not know how many light cigarettes would have to be smoked to get the same level of tar intake as from one full flavor cigarette. Fewer than 10% believed that it would be one light cigarette.

2391. Defendants have used this misperception to their advantage. A 1996 article in the American Journal of Public Health cited a 1993 Gallup survey in which 56% of smokers believed use of the term "low tar" conveyed relative

safety compared to full-flavor cigarettes. The American Journal of Public Health article also cited a 1987 National Health Interview Survey finding that 46% of smokers of cigarettes with tar yields of 6 mg. or lower (per the FTC Method) believed they had reduced cancer risk compared with smokers of cigarettes with higher FTC tar yields. ...*accord* 99053048-3558 at 3112 (U.S. 57494) (2001 Institute of Medicine study stating "When filtered and low-yield cigarettes were introduced into U.S. markets, they were heavily promoted and marketed with both explicit and implicit claims of reducing the risk of smoking. Even as data accumulated, albeit slowly, that these products did not result in much-if any-decrease in risk, consumers have continued to believe otherwise.... Consumer misunderstanding is explained in part by the ways in which these products are marketed.... [T]he tobacco companies have appealed to health concerns of smokers at least since 1927. Claims about tar and nicotine levels appeared as early as 1942").

2392. Defendants continue to disseminate false and misleading public statements regarding their true intent in marketing low tar cigarettes. For example, Defendants Philip Morris, RJR, B & W, and Lorillard jointly stated to the FTC in February 1998: "The manufacturers do not claim that lower-yield cigarettes are 'safe' or are 'safer' than higher yield cigarettes." Comments of Philip Morris Inc., RJR Tobacco Co., Brown & Williamson Tobacco Corp., and Lorillard Tobacco Co. on the Proposal Titled FTC Cigarette Testing Methodology Request for Public Comment (62 Fed.Reg. 48,158) at 3, 94 ("Joint Comments") (U.S. 88618).

2393. Defendants have publicly committed to refrain from marketing with implied health claims. In April 1964, the Cigarette Company Defendants adopted the Cigarette Advertising and Promotion Code ("Code"), which includes provisions prohibiting "advertising which makes a representation with respect to health." The Cigarette Company Defendants have claimed publicly that they have obeyed and continue to obey the 1964 Code, last revised in December 1990. Each cigarette company Defendant continues to state on its website and in other public statements that it has adopted the Code and that it follows the Code in planning and executing its cigarette marketing. *See* Section V(F)(7)(a)((1)) regarding the total lack of enforcement of the Code. More recently, Defendants agreed in the 1998 Master Settlement Agreement not to make "any material misrepresentation of fact regarding the health consequences of using any tobacco product." Section III(r) of the Agreement states:

> Prohibition on Material Misrepresentations. No Participating Manufacturer may make any material misrepresentation of fact regarding the health consequences of using any Tobacco Product, including any tobacco additives, filters, paper or other ingredients.

2394. Defendants also told the FTC in their 1998 testimony: “Smokers are familiar with the ratings produced by the current test method, and continued use of the current test method assures historical continuity of the data. For these reasons, testing under the current FTC test method should continue.”

2395. In response to the FTC's question regarding the need for official guidance on brand descriptors, Defendants stated: “The manufacturers are not convinced that there is a need for official guidance with respect to the terms used in marketing lower rated cigarettes.” As to terms, such as “light” and “ultra light,” “[t]he manufacturers believe smokers understand that these descriptors are terms of comparison rather than signifiers of absolute value.”

2396. In response to the following FTC query:

> What data, evidence, or other relevant information on consumer interpretation and understanding of terms such as “ultra low tar,” “ultra light,” “low tar,” “light,” “medium,” “extra light,” and “ultima,” as used in the context of cigarettes exists? Do consumers believe they will get significantly less tar from cigarettes described as “light” or “low tar” than from regular full flavor cigarettes, and do they believe they will get significantly less tar from cigarettes described as “ultra low tar” or “ultra light” than from “light” or “low tar” cigarettes? Do the brand descriptors convey implied health claims?

Defendants Philip Morris, RJR, B & W, and Lorillard jointly stated in their joint comments to the FTC:

> The manufacturers believe that consumers choose “light” or “ultra” products for a variety of reasons, including lighter flavor, lighter taste, less menthol (or other flavor) taste, and smoother smoking characteristics. Some consumers may choose such products for other reasons. The manufacturers do not intend the descriptors to convey any level of ‘safety’ with regard to their products.

Defendants' joint comments further stated: “The manufacturers are not aware of evidence that consumers use descriptors in lieu of the FTC numbers as their primary source of information about the ‘tar’ and nicotine yields of different brand styles.”

2397. In response to the FTC's question:

> What available evidence exists concerning how consumers view cigarettes with relatively low tar and nicotine ratings and their perception

> of the relative risks of smoking such cigarettes rather than full flavor cigarettes?

Defendants Philip Morris, RJR, B & W, and Lorillard jointly stated:

> The manufacturers are unaware of evidence concerning such consumer views and perceptions except to the extent that such evidence is presented in [the National Cancer Institute's Smoking and Tobacco Control Monograph No. 7].

2398. Defendants' testimony to the FTC fails to make any reference to the vast amounts of consumer research Defendants conducted, and had conducted for them by their numerous advertising and marketing consultants, that expressly found that many consumers strongly disliked the taste of low tar cigarettes, but were smoking them because they believed they were healthier for them. *Accord* 2041186475-6517 at 6478, 6504 (U.S. 22181*) (November 29, 1994 submission to the National Cancer Institute on behalf of B & W, American Tobacco, Lorillard, and Liggett contending that smokers use FTC tar and nicotine ratings primarily for information relating to taste considerations, referring to what Defendants called “the well-established significance of the FTC's machine-determined yields for comparing the flavor, richness and satisfaction of different brands of cigarettes,” and predicting that if modifications to the FTC Method occurred, “[c]onsumers ... would be deprived of important information about the flavor, taste and feel of cigarettes -information consumers consider to be highly relevant in distinguishing among” brands).

2399. As detailed below, Defendants' public statements about low tar cigarettes on their websites, the statements of their executives, and their internal documents are false and misleading.

a. Philip Morris, see findings 2400 through 2483 as set forth in sections:

> **(1) Philip Morris's Low Tar Cigarette Marketing Techniques**
>
> **(2) Philip Morris's Research on the Low Tar Cigarette Category**
>
> **(3) Philip Morris's Public Statements About Low Tar Cigarettes**

b. R.J. Reynolds, see findings 2484 through 2515 as set forth in sections:

> **(1) R.J. Reynolds's Low Tar Marketing Techniques**
>
> **(2) R.J. Reynolds's Research on the Low Tar Cigarette Category**

(3) R.J. Reynolds's Public Statements About Low Tar Cigarettes

c. Brown & Williamson, see findings 2516 through 2556 as set forth in sections:

(1) Brown & Williamson's Marketing of Low Tar Cigarettes

(2) Brown & Williamson's Research on the Low Tar Cigarette Category

(3) Brown & Williamson's Public Statements About Low Tar Cigarettes

d. BATCo, see e.g., findings 2557 and 2574 as set forth in sections:

(1) BATCo's Research on the Low Tar Cigarette Category

(2) BATCo's Public Statements About Low Tar Cigarettes

e. American Tobacco Marketing of Low Tar Cigarettes

2575. American Tobacco's brands included Carlton, Lucky Strikes, Pall Mall, and Tareyton, until they were acquired by B & W in 1995. Like the other Defendants, American Tobacco used descriptive terms and low FTC tar ratings to convey misleading and unsubstantiated health messages to the public regarding their low tar cigarettes.

6. Conclusions

2626. The evidence set forth above overwhelmingly establishes the following facts.

2627. It is clear, based on their internal research documents, reports, memoranda, and letters, that Defendants have known for decades that there is no clear health benefit from smoking low tar/low nicotine cigarettes as opposed to conventional full-flavor cigarettes. It is also clear that while Defendants knew that the FTC Method for measuring tar and nicotine accurately compared the nicotine/tar percentages of different cigarettes, they also knew that that Method was totally unreliable for measuring the actual nicotine and tar any real-life smoker would absorb because it did not take into account the phenomenon of smoker compensation. Defendants also knew that many smokers were concerned and anxious about the health effects of smoking, that a significant percentage of those smokers were willing to trade flavor for reassurance that their brands

carried lower health risks, and that many smokers who were concerned and anxious about the health risks from smoking would rely on the health claims made for low tar cigarettes as a reason, or excuse, for not quitting smoking.

2628. Despite this knowledge, Defendants extensively-and successfully-marketed and promoted their low tar/light cigarettes as less harmful alternatives to full-flavor cigarettes. Moreover, Defendants opposed any changes in the FTC Method which would more accurately reflect the effects of compensation on the actual tar and nicotine received by smokers, denied that they were making any health claims for their low tar/light cigarettes, and claimed that their marketing for these cigarettes was based on smokers' preference for a “lighter,” “cleaner” taste.

2629. By engaging in this deception, Defendants dramatically increased their sales of low tar/light cigarettes, assuaged the fears of smokers about the health risks of smoking, and sustained corporate revenues in the face of mounting evidence about the health dangers of smoking.

KESSLER’S Table of contents - PART V.F:

V. F. From the 1950s to the Present, Different Defendants, at Different Times and Using Different Methods, Have Intentionally Marketed to Young People Under the Age of Twenty-one in Order to Recruit “Replacement Smokers” to Ensure the Economic Future of the Tobacco Industry

Plaintiff’s First Amended Complaint First Cause of Action - Negligence; Third Cause of Action - False Representation; and, Fourth Cause of Action - Deceit, Fraudulent Concealment

Kessler Finding of Fact Nos. 2630 through 2917; 2933 through 2990; 3186 through 3191; 3193 through 3203; 3205 through 3254; and, 3266 through 3302

Exemplars of Relevant Findings of Fact:

1. Definition of Youth

2630. There is much confusion, both in the internal documents of Defendants and the various kinds of evidence introduced in this trial, over the definition of the term “youth.”

2632. Defendants' own internal documents make constant reference to eighteen to twenty-one year olds as “youth.” Defendants' public utterances often use the word “youth” to refer to those under the age of eighteen, as well as to those between

eighteen and twenty-one. The expert witnesses on both sides also used the term interchangeably to refer to those under eighteen and those between eighteen and twenty-one. In short, no uniform and consistent definition of the term was used by any party to define the age parameters for the term "youth." Moreover, it is clear from the evidence that the eighteen to twenty-one year age bracket encompasses young people transitioning to adulthood who are deciding whether or not to experiment with smoking, who are still immature and at their most vulnerable to the blandishments of advertising and marketing, and who are usually not yet addicted, heavy smokers.

2633. Given this background, and Defendants' repeated assertions that their marketing is directed at maintaining brand loyalty and attracting brand "switchers" rather than inducing "youth" to initiate smoking, the Court finds that defining the term "youth" to include those twenty-one and under is the most appropriate definition, as well as the one used most frequently by the parties.

2. The Defendants Need Youth as Replacement Smokers

2634. Every year, over 400,000 people die of smoking related diseases. In addition, there are a relatively small number of people who quit smoking each year. In order to sustain and perpetuate themselves, Defendants must bring in new smokers to replace those leaving the market. Each cigarette manufacturing company gains a small amount (less than 10%) of smokers through "switching" or changing brands. Only about 9% of adult smokers switch among Defendants' brands. Defendants' own employees admit that brand switching rates are low and falling. According to David Beran, Executive Vice President of Strategy, Communications and Consumer Contact for Philip Morris, the brand switching rate for 1997 was 4.0%, was 6.3% for 2002, and was 5.4% for 2003. Switching, by definition, does not bring in new smokers to the industry as a whole.

2635. The only way Defendants can sustain themselves is by bringing in large numbers of replacement smokers each year. Carl Schoenbachler, current president and CEO of BATIC (a former parent of B & W Tobacco and holding entity for B & W Tobacco) acknowledged that although the company has a stated policy of not marketing to non-smokers, "it was a reasonable conclusion" that B & W would become unprofitable if non-smokers did not become smokers. Schoenbachler PD,

2636. The majority of people who become addicted smokers start smoking before the age of eighteen, and many more before the age of twenty-one. Ellen Merlo, Senior Vice President at Philip Morris, admitted that she was aware that over 80% of smokers start smoking before they turn eighteen. A 1989 RJR document titled "Camel Y & R Orientation" discussed the "strategic importance" of young adult smokers ("YAS"): "YAS are the only source of replacement smokers. Less than

one-third of smokers start after age 18." The document further stated: "To stabilize RJR's share of total smokers, it must raise share among 18-20 from 13.8% to 40% ... ASAP." In a September 20, 1982 memorandum, Diane S. Burrows, RJR Marketing Development Department researcher, stated, "if a man has never smoked by age 18, the odds are three-to-one he never will. By age 21, the odds are twenty-to-one."

2637. Moreover, smokers are remarkably brand-loyal. Defendants realize that they need to get people smoking their brands as young as possible in order to secure them as lifelong loyal smokers. As Bennett LeBow, President of Vector Holdings Group, stated, "if the tobacco companies really stopped marketing to children, the tobacco companies would be out of business in 25 to 30 years because they will not have enough customers to stay in business."

2638. In internal documents, Defendants admit that stimulating youth smoking initiation and retaining and increasing their share of the youth market is crucial to the success of their businesses. For example, in a 1999 slide presentation, titled "ASU30 [Adult Smoker Under 30] Project," manager Rick Stevens analyzed BATCo's "ASU30 Performance 1998," stating that younger adult smokers were a "critical factor in the growth and decline of every major brand and company over the last 50 years." Furthermore, a slide, titled "Value of YAS," recognized that "[m]arket renewal is almost entirely from 18 year old smokers" and "[n]o more than 5% start smoking after age 24."

2639. Defendants know that marketing their cigarettes to youth is essential to each company's success and longevity, and for that reason create marketing campaigns designed to increase youth consumption. As United States marketing expert Dr. Robert Dolan explained:

> The trend in tobacco companies' spending on marketing has continued to increase dramatically. Tobacco industry spending of $2 billion on advertising and promotion in 1980 reached $4 billion in 1988 and then $6 billion in 1994. After four years around the $6 billion mark, spending shot up [to] $11.2 billion by 2001. In 2002, the last year for which data is available, the tobacco companies spent $12.47 billion, an increase of 11.61% over 2001. The fundamental dynamic of the industry has not changed though. The tobacco companies knew that brand loyalty is a key phenomenon and if someone doesn't start smoking as a teenager, he or she is unlikely to start.... Defendants still represent that the only objective of marketing is impacting brand choice while they implement marketing programs which increase the value potential customers see in smoking-attracting people including teenagers to the market and deterring others from quitting.

2642. A March 1988 report, titled "Younger Adult Smoker Opportunity," discussed "RJR's most critical strategic need-Younger Adult Smokers." The report stated: "Improved younger adult development is a key Corporate priority ...-Necessary for core brand revitalization (# 1 Corporate priority)-Lack of younger adults responsible for total Company volume trend." It indicated that RJR's "[m]arketing department [was] refocusing efforts against younger adult smokers." The report indicated the importance of unrestricted advertising for reaching these younger smokers and stated that a possible advertising ban "would severely limit RJR's ability to introduce [a] new brand or attract younger adult smokers." The report also stated that "[y]ounger adult smokers drive the growth of two major competitors"-Marlboro and Newport-which were "capturing an ever increasing share of younger adult smokers." Finally, the report explained that young smokers were crucial to the continuing survival of RJR because teenagers remain loyal to their brand of choice as they age and because teenagers smoke an increasing volume of cigarettes as they become adults: "[Y]ounger adult smokers are the **key** to future growth for any company or brand for several reasons: (1) Aging explains **75%** of SOM [Share of Market] growth. (2) Benefits of younger adult smokers compound over time as a result of **brand loyalty** and the **increase in rate per day** as smokers age." In summary, the report stated, "RJR must begin now to capture younger adult smokers:-Volume decline inevitable without YAS-Potential for future advertising restrictions-Marketing department restructured to address the issue." (emphasis in original).

2646. Carl Schoenbachler, current president and CEO of BATIC (a former parent of B & W Tobacco and holding entity for B & W Tobacco), when asked if the statement, "The key to sustainable long-term profit growth in the U.S. is ASU 30," was accurate, responded: "Yes, I would say that's true." He explained that

> there tends to be a great deal of loyalty in cigarette brands. So, just a natural mathematical equation would suggest if you-if you don't have thirty-year-olds smoking your product, you won't have forty-year-olds and fifty-year-olds. It's a very brand loyal business.

3. Defendants' Marketing Is a Substantial Contributing Factor to Youth Smoking Initiation

2647. Cigarette marketing, which includes both advertising and promotion, is designed to play a key role in the process of recruiting young, new smokers by exposing young people to massive amounts of imagery associating positive qualities with cigarette smoking. Research in psychology and cognitive neuroscience demonstrates how powerful such imagery can be, particularly for young people, in suppressing perception of risk and encouraging behavior. Defendants' own statistics demonstrate how successful they have been in marketing

their three main youth brands: Philip Morris's Marlboro, RJR's Camel, and Lorillard's Newport.

a. Development of the Link Between Marketing and Youth Smoking

(1) No Single-Source Causative Factor Can Describe the Complex Link Between Marketing and Youth Smoking

2648. In 1989, the Surgeon General concluded:

> There is no scientifically rigorous study available to the public that provides a definitive answer to the basic question of whether advertising and promotion increase the level of tobacco consumption. Given the complexity of the issue, none is likely to be forthcoming in the foreseeable future.

2650. Social scientists are increasingly uncomfortable applying the term "causation" and its corresponding rigorous criteria, which require proof of consistency, strength, specificity, temporality, and coherence of the association, in describing social behavioral phenomena. Government expert Dr. Dean Krugman noted he would "never phrase the question [of the relationship between marketing and youth smoking initiation] in a causal manner":

> You cannot look at advertising and promotion and get a direct causal link to behavior. That has been well cited in the literature, it's been well cited in the 1994 Surgeon General's Report, that the whole notion of positing a causal question is really not germane to understanding if there is influence between advertising and sales promotion and youth behavior.

...*see also* Krugman WD, 158:18-159:4 ("the advertising/promotion and smoking initiation/continuation relationship is not an empirically verifiable phenomenon"). For more on Dr. Krugman's credentials, see ¶ 2681, *infra.*

(2) Public Health Authorities Have Found that Marketing Is a Substantial Contributing Factor to Youth Smoking Initiation

2651. In her 1994 Report, the Surgeon General pointed out:

> A substantial and growing body of scientific literature has reported on young people's awareness of, and attitudes about, cigarette advertising and promotional activities. Research has also focused on the effects of these activities on the psychosocial risk factors for beginning to smoke. Considered together, these studies offer a compelling argument for the mediated relationship of cigarette advertising and adolescent smoking.

2652. In the same Report, the Surgeon General explicitly addressed and rejected Defendants' claims that their marketing activities are directed only toward adult brand-switchers:

> Even though the tobacco industry asserts that the sole purpose of advertising and promotional activities is to maintain and potentially increase market shares of adult consumers, it appears that some young people are recruited to smoking by brand advertising. Two sources of epidemiologic data support the Surgeon General's assertion. Adolescents consistently smoke the most advertised brands of cigarettes.... Moreover, following the introduction of advertisements that appeal to young people, the prevalence of the use of those brands-or even the prevalence of smoking altogether -increases.

2653. The Surgeon General further noted in the 1994 Report:

> Current research suggests that pervasive tobacco promotion has two major effects: it creates the perception that more people smoke than actually do, and it provides a conduit between actual self-image and ideal self-image-in other words, smoking is made to look cool. Whether causal or not, these effects foster the uptake of smoking, initiating for many a dismal and relentless chain of events.

2661. Regarding the numerous studies which examine the role of tobacco advertising and promotion in smoking initiation, NCI's Monograph 14 concluded that:

> When [these studies are] viewed as a group, ... the conclusion that there is a causal relationship between tobacco marketing and smoking initiation seems unassailable. .... [T]obacco advertisements are particularly attractive to adolescents who, for one reason or another, are looking for an identity that the images are carefully designed to offer.

(3) Independent Studies Have Found that Marketing Is a Substantial Contributing Factor to Youth Smoking Initiation

2662. Several independent longitudinal studies have demonstrated the positive link between marketing and youth smoking. “Longitudinal studies, which collect data at two or more points in time, can help sort out the ‘directionality’ of the relationship between advertising and smoking behavior.”

2663. Unfortunately, “[t]here is not one longitudinal study that directly measures the impact of exposure to cigarette marketing on the one hand, with initiation of

smoking on the other." ...*see also* Biglan TT, 1/11/05, 9670:4-12 (testifying that he cannot "identify a single longitudinal study that measures the relationship between the actual marketing practices on the one hand-not receptivity or susceptibility or attitudes or needs-but independently measures ... defendants' cigarette marketing as a variable in its relationship to actual smoking behavior.") This is largely because of widespread concerns about the ethical issues raised in devising a controlled experiment which would expose children and young people to cigarette advertising for purposes of comparing them to children and young people not exposed to such advertising.

2664. As a result, longitudinal studies have been forced to rely upon "proxies" for exposure, such as "susceptibility," and "receptivity" to smoking initiation. For example, one of the receptivity measures used in studies is the possession of cigarette company promotional items. However, there is concern that the studies fail to account for "unobserved preferences" for smoking that may have "already existed among the adolescents studied." As a result, a simple correlation between the possession of such smoking-related items and future smoking does not indicate that the items caused smoking.

2665. Recognizing the limitations of such longitudinal studies, there have been four which have provided useful information about the relationship between marketing and youth smoking:

- Pierce, et al., Journal of the American Medical Association, 279(7): 511-515 (1998)

- Biener and Siegel, American Journal of Public Health, 90:407-411 (2000)

- Sargent, et al., Preventive Medicine, 30:320-327 (2000)

- Choi, et al., American Journal of Preventive Medicine, 22(4):228-233 (2002).

2666. The Pierce study is a prospective study that examined whether California adolescents who had never smoked, "who had a favorite cigarette advertisement, ... or were willing to use a cigarette promotional item, were significantly more likely to progress toward smoking, including increased susceptibility and intention to smoke" than adolescents not susceptible to smoking. Pierce concluded that "tobacco promotional items are causally related to the onset of smoking." However, the Pierce study does not purport to determine the effect of marketing on actual smoking behavior, but rather on progression along a smoking susceptibility continuum.

2667. The 2000 Biener & Siegel study was similar in design in many respects to the 1998 Pierce study. Unlike Pierce, Biener & Siegel's "baseline" included youth who had smoked one cigarette, in addition to older smokers. Biener AL & Siegel M., "Tobacco marketing and adolescent smoking: more support for a causal inference," American Journal of Public Health 90(3):407-411 (2000). In addition, Biener & Siegel measured progression to smoking behavior (i.e., smoking at least 100 cigarettes), not just susceptibility to smoking. *Id.* at 61:13-15. Biener & Siegel "attempt[ ] to improve upon the Pierce study""by examining the connection between advertising (using possession of a branded promotional item as a receptivity proxy) and actual adolescent smoking behavior." The study found a statistically significant relationship between "receptivity" and progression to established smoking, and specifically found that, among persons who reported smoking less than one cigarette in their lifetime in 1993 (ages twelve through fifteen), but who had a favorite cigarette advertisement or who owned a cigarette brand promotion item, 46% progressed to established smoking (ages sixteen through nineteen).

2668. In the Sargent (2000) study, researchers in New Hampshire reported the results of a longitudinal study conducted among a cohort of rural Vermont students. Baseline data (data from the starting point of the study) were collected in 1996, with follow up surveys in 1997 and 1998. The researchers found that receptivity to cigarette advertising (owning or being willing to own a cigarette promotional item) at baseline was associated with higher smoking rates at the eighteen month follow-up. After controlling for possible confounding factors, the researchers reported: "our study documents a strong and statistically significant association between receptivity to cigarette promotions and increased smoking uptake over time in a cohort of adolescents." Sargent, et al., Preventive Medicine 30:320-327, 2000.

2669. The Choi (2002) study measured progression to smoking in 1996 among young persons who reported being confirmed "never smokers" in 1993 (ages twelve through seventeen), but who had a favorite cigarette advertisement, or who owned or were willing to own a cigarette brand promotion item, and concluded that 34% of all experimentation with cigarettes in California between 1993 and 1996 (ages fifteen through twenty) was attributable to tobacco marketing activities. Pierce JP, Choi WS, Gilpin EA, Farkas AJ & Berry CC., "Tobacco industry promotion of cigarettes and adolescent smoking," JAMA 279(7): 511-515 (1998).

2670. Finally, the Cochrane Review, a "systematic review [of nine longitudinal studies] on the impact of tobacco marketing on adolescent smoking behaviors," concluded: "Longitudinal studies suggest that exposure to tobacco advertising and promotion is associated with the likelihood that adolescents will start to smoke."

2671. While it is true that no study has ever attempted to measure the direct link between exposure to marketing and youth smoking initiation or continuation, all of the studies discussed used proxies to study that relationship and, most significantly, all demonstrated a positive correlation between marketing and promotion on the one hand and youth smoking progression on the other.

(4) Credible Expert Witnesses Have Found that Marketing Is a Substantial Contributing Factor to Youth Smoking Initiation

2672. The testimony of the expert witnesses establishes that the weight of all available evidence, including survey data, scientific studies and experiments, and behavioral and econometric studies, supports the conclusion that cigarette marketing is a substantial contributing factor in the smoking behavior of young people, including the decision to begin smoking and the decision to continue smoking.

2673. Despite Defendants' frequent public assertions that cigarette marketing only affects brand switching and brand loyalty, marketing has been and continues to be enormously effective in influencing young people to smoke. For example: (a) young people who are more familiar with the advertising are more likely to begin smoking; (b) increased expenditures on cigarette marketing campaigns have been associated with increases in the incidence of smoking among adolescents; (c) adolescents who are exposed to more cigarette advertising are more likely to begin smoking; and (d) the brands that are most popular with young people are the ones where advertisements are designed to appeal to their interest and vulnerability and where the most money has been spent on advertising and promotional activities.

2674. The evidence is overwhelming that Defendants intentionally exploit adolescents' vulnerability to imagery by creating advertising that utilizes the themes of independence, adventurousness, sophistication, glamour, athleticism, social inclusion, sexual attractiveness, thinness, popularity, rebelliousness, and being "cool." Cigarette Company Defendants have, over the years, placed this advertising in magazines, on billboards, at point of sale (or "POS," meaning marketing materials placed in retail locations such as convenience stores), and in other venues that historically and currently reach millions of teens.

2677. Defendants' marketing activities brought new smokers into the market and retained existing smokers in the market.

2678. Dr. Robert Dolan, Dean of the University of Michigan School of Business, former Harvard Business School Professor, and widely used marketing consultant, while acknowledging that marketing practices of the tobacco companies were not the only factor impacting the likelihood of an individual's smoking, and that

behavior of other family members and peers are other contributing factors, still concluded that the marketing of the tobacco companies, carried out in a highly sophisticated and heavily financed fashion, was a substantial contributing factor to the number of teenagers who began smoking, the likelihood they would continue as smokers, and their consumption rate.

2679. Dr. Anthony Biglan, currently a Senior Scientist and Director at the Oregon Research Institute, has been conducting research on adolescent smoking for over twenty-five years. He has written over 100 publications on adolescent problem behavior, particularly smoking, and has completed grant projects for the National Cancer Institute and the National Institute on Drug Abuse. From September 2000 through June 2001, Dr. Biglan was a Fellow at the Center for Advanced Study in the Behavioral Sciences at Stanford, and also served as a Participant on the Behavior Change Expert Panel of the Office of White House National Drug Control Policy from 1998 to 2001.

2680. Upon reviewing the published literature on adolescent development, his own research and clinical work with adolescents and their families, and Defendants' internal documents, Dr. Biglan concluded that

> tobacco companies understand what motivates adolescents to smoke, such as desires to be popular, masculine, independent, cool, rebellious, or to have excitement. The companies use their understanding of adolescent needs to create images in marketing their brands (e.g., Marlboro, Camel, Newport) that convey to adolescents they can achieve such desired outcomes by smoking these brands. In short, tobacco companies market cigarettes to adolescents by exploiting the psychological needs of adolescents.
>
> The central purpose of the tobacco companies' image advertising is motivating adolescents to smoke.
>
> These studies show that adolescents have distinct images of smokers and they are more likely to smoke if their self-image is like the image they have of a smoker.... [T]he images adolescents have of smokers of specific brands are precisely the images that the tobacco companies convey in their marketing.

2681. Dr. Dean Krugman, Professor and Chair of the Department of Advertising and Public Relations at the University of Georgia, has published over thirty peer-reviewed articles on marketing, particularly tobacco marketing, including an article, titled “Teenage Exposure to Cigarette Advertising in Popular Consumer Magazines,” published in 2000. Dr. Krugman has also served as a reviewer for numerous scholarly journals, including the Journal of Broadcasting & Electronic

Media, and the Journal of Marketing Research, and is currently a Member of the Editorial Board of the Journal of Advertising.

2682. Dr. Krugman concluded that the tobacco industry knowingly targeted adolescents under eighteen years of age. In his estimation, the marketing strategies of the tobacco industry have been effective, thorough and well-planned efforts to attract teenagers to cigarettes and contribute to the continuance of teenage smoking.

> Tobacco companies: (1) employed the concept of peers in order to market to teenagers; (2) use images and themes in their marketing that appeal to teenagers; and (3) employ advertising and promotion strategies to knowingly reach teenagers. Brand share data confirms that the leading brands among teenagers are image oriented and have been among the most heavily supported brands by advertising and promotion. Taking all these elements together, I have reached ... [the] conclusion, that the tobacco industry has been effective in the planning and execution of cigarette advertising and promotion to teenagers.
>
> It is my conclusion that advertising and promotion are an important part of the smoking uptake and continuation process. I am very satisfied after examining the total situation-industry investments, the actual advertising and sales promotion, academic and industry research, industry documents and industry comments-that advertising and sales promotion are influential in the initiation and continuation of smoking among teenagers.

2683. Dr. Michael Eriksen was the longest serving Director of the Public Health Service's Center for Disease Control and Prevention's Office of Smoking and Health (“OSH”), the primary federal agency responsible for coordinating tobacco and health issues. From 1992 to 2000 at OSH, Dr. Eriksen was responsible for the preparation of the Reports of the Surgeon General. In addition, Dr. Eriksen has researched and published about the tobacco industry and tobacco-related disease control and prevention for over twenty years. Dr. Eriksen has written nearly eighty peer-reviewed articles and books on tobacco-related issues and has received numerous professional awards and honors.

2684. Dr. Eriksen, relying upon “the weight of the evidence,” including numerous scientific studies, Reports of the Surgeon General, and other reliable publications and reports, concluded that Defendants' cigarette marketing is a substantial contributing factor to youth smoking initiation and continuation. Dr. Eriksen also concluded that adolescent smoking initiation is an immature behavior, one driven by the psychosocial development of adolescents and the cigarette brand imagery that corresponds precisely to adolescent aspirations.

2685. Dr. Eriksen explained that he used the term "substantial contributing factor" to mean "one cause among many." He provided extensive and clear testimony on this point:

> Q. And the question there is, "Is there any difference in your mind between saying that advertising is a substantial contributing factor to the decision to smoke and saying that advertising is the cause of the decision to smoke?"...
>
> A. Yes.
>
> Q. Dr. Eriksen, your testimony at lines 20 of page 92 through line 5 of 93, was "That the language that I've used in my depositions and testimony and statement that there will be consistency between using the term contributing factor and a cause implying-as long as it's understood it's not being said to be the only cause, but it's one factor among many or one cause among many. I would generally be comfortable with that being used interchangeably." And is that consistent with the testimony that you were providing today?
>
> A. It certainly was my intent to be consistent with that.... I'm comfortable with using cause if it's one cause of many. It's in my written testimony to that effect, and that's how I believed I was answering the question in the context of cause. If it's meant the only cause, I don't agree that's the only cause. But if it's one cause of many I'm comfortable with using the term cause.
>
> Q. So by choosing the term "substantial contributing factor," you meant to indicate that marketing was one cause among many?
>
> A. Yes, I meant it to mean a cause, but not the cause.

b. The Ubiquity of Defendants' Marketing Normalizes and Legitimizes Smoking for Youth

2689. Defendants have consistently, over the past fifty years, spent vast sums of money on advertising and promotion, ensuring that their brand imagery would be repeated frequently and in as many different media as possible so that the message is received by the maximum number of smokers and potential smokers.

2692. Between 1952 and 1962, the six leading cigarette manufacturers, including these Defendants, spent approximately $1.2 billion for television, newspaper, and general magazine advertising. Their total expenditures for all media in this time period may have been as high as $2 billion. Between 1963 and 1970, they spent

over $1.5 billion on television advertising, and over $180 million on radio advertising. It has been estimated that on a single evening in this time period, Defendants' television cigarette advertising reached 46% of thirteen to seventeen year olds, 38% of the United States population eighteen years old and over, and 26% of the population ages two to twelve.

2693. In recognition of the enormous impact of television advertising, on January 1, 1971, Congress imposed a broadcast ban that ended all cigarette advertisements on television. On January 1, 1971, alone, the last day on which such advertisements were permitted, Cigarette Company Defendants spent over $2 million, three times as much as was spent on an average day in 1970.

2697. Teenagers in particular have a heightened sensitivity to image and promotion themes because they are at a stage in their psychosocial development when they are struggling to define their own identities. Teenagers actively search for cues in advertising and amongst peers for the “right” way to look and behave. A 2004 Report of the American Psychological Association notes that advertising is particularly effective with teenagers when it normalizes smoking (and alcohol consumption). *Id.* at 50:4-12. In this way, ubiquitous cigarette advertising and sales promotion serve to normalize and socially sanction smoking.

2698. In sum, the ubiquity of Defendants' marketing increases young peoples' perceptions of the prevalence of smoking (“everyone is doing it”), normalizes smoking, and connects positive imagery (sex appeal, popularity, peer approval, success, and independence) with smoking, all of which work together to encourage youth smoking initiation and continued consumption.

c. Risk Perception: The Inability of Youth to Grasp the Full Implications of Smoking

2699. Dr. Paul Slovic, an expert in the field of risk perception, was one of the first to publish research in this area and recently published a book, titled “Smoking: Risk, Perception, and Policy.” He has been a Professor in the Department of Psychology at the University of Oregon since 1986, and the President of Decision Research in Eugene, Oregon. Dr. Slovic is a charter fellow of the American Psychological Society and a fellow of the American Psychological Association. In addition, he currently serves on the editorial boards of Risk Analysis, Risk Abstracts, Behavioral Decision Making, Risk, Decision and Policy, and the Journal of Psychology and Financial Markets.

2700. Dr. Slovic concluded that most people have a deficient appreciation of the risks associated with smoking, particularly when they begin to smoke. *See generally* Slovic WD. Many people, and particularly young people, do not

adequately understand and appreciate the cumulative risk that smoking entails. Most smokers only begin to think of risk after they have started to smoke regularly and have already become addicted. At that point, more than 80% of smokers wish they had never begun to smoke. As people become more experienced smokers, they overwhelmingly regret having started smoking. Paul Slovic, Annenberg Survey ch. 6 (2001). Smokers in the Annenberg survey were asked, "If you had to do it over again, would you start smoking?" More than 85% of adult smokers and about 80% of young smokers answered no. *Id.*

2701. Many young smokers tend to believe that smoking the "very next cigarette" poses little or no risk to their health. Because the most serious harmful consequences of smoking are cumulative, and occur in the distant future, and because teenagers are focused on the present rather than the future and lack an understanding of the addictive properties of cigarettes, it is unlikely that the decisions by teenagers to initiate smoking are influenced by concerns about future harmful consequences.

2702. Initiation of smoking before the age of twenty-one is particularly harmful because, the earlier one begins smoking, the more likely one will become addicted, the less likely one will be able to quit, and the more likely one will develop a smoking-related disease.(1994 Surgeon General Report).

2705. Dr. Neal Benowitz, an expert in toxicology and pharmacology, is Professor of Medicine, Psychiatry and Biopharmaceutical Sciences at the University of California, San Francisco ("UCSF"). Healso serves as Chief of UCSF's Division of Clinical Pharmacology and Experimental Therapeutics, as well as Vice Chair of the Department of Biopharmaceutical Sciences at UCSF's School of Pharmacy. In addition, Dr. Benowitz is an attending physician and consultant at the San Francisco General Hospital. Dr. Benowitz has worked extensively on smoking and health issues. He has written over 300 peer-reviewed articles and almost fifty book chapters on subjects related to the pharmacology of nicotine and nicotine addiction. He was also a senior scientific editor and contributing author of the 1988 Report of the Surgeon General. Dr. Benowitz also served as a peer reviewer for the Surgeon General's 1994 Report concerning tobacco use by youth. Based on his academic credentials, his clinical experience as an attending and consulting physician, his work for the Surgeon General, and his prodigious output of peer-reviewed articles, the Court credits his testimony. According to Dr. Benowitz:

> The earlier a person starts smoking cigarettes, the more highly dependent they will be as an adult, and the more difficult it will be for them to quit. In addition, the earlier someone starts smoking, the higher that person's smoking rate is later on in life.

2707. Most people do not possess a meaningful knowledge of the adverse health effects of smoking. Most people do not have a complete understanding of the many serious diseases caused by smoking, the true nature of addiction, or what it would be like to experience either those diseases or addiction itself. Rather, most people have only a superficial awareness that smoking is dangerous.

Surveys have demonstrated that individuals have little knowledge of the reality of the pain, suffering, and despair of those with lung cancer, emphysema, congestive heart failure, and other smoking related diseases. One survey showed that 53% of adolescent smokers and 49% of adult smokers know "a little" or "not much at all" about the pain and suffering associated with lung cancer. Likewise, 68% of adolescent smokers and 54% of adult smokers know "a little" or "not much at all" about the pain and suffering associated with emphysema. More than 70% of adults and 80% of adolescents overestimated the likelihood that lung cancer is curable.

2708. Underage smokers and potential smokers are particularly vulnerable to cigarette marketing because they are not capable of making a fully informed decision whether to start or continue smoking for a variety of reasons, including the fact that they underestimate personal risks and lack the judgment which can only be developed through experience. Youth also fail to appreciate the risks and consequences of addiction.

2716. In sum, the research and expert testimony demonstrate that most youth, at a time when they are deciding whether to start smoking, have a very inadequate understanding of the medical consequences, physical pain, and emotional suffering which results from smoking and the unlikelihood of their being able to quit smoking at some future time.

4. Tracking Youth Behavior and Preferences Ensures that Marketing and Promotion Reach Youth

a. Defendants Track Youth Behavior and Preferences

2717. Defendants spent enormous resources tracking the behaviors and preferences of youth under twenty-one, and especially those under eighteen. Defendants want to draw a bright line between tracking and targeting youth. Defendants claim that tracking is only a research tool to obtain information about youth and that targeting is the directing of all forms of marketing at a particular demographic group, i.e., people under the age of twenty-one. Whether all of the activity detailed below is labeled tracking or targeting is simply a matter of semantics. The activities have the same purpose: to start young people smoking and to keep them smoking. Defendants' argument that their tracking was not done to determine youth preferences and behaviors so as to market to youth more effectively, is patently not

credible. Despite their denials that they used such information for marketing purposes, the evidence indicates that Defendants tracked youth in order to determine how best to induce them to start, and continue, smoking cigarettes.

(1) Philip Morris, see findings 2716 through 2774

(3) American Tobacco, BATCo, and Brown & Williamson, see findings 2801 through 2843

(4) R.J. Reynolds, see findings 2844 through 2891

b. Defendants' Marketing Employs Themes Which Resonate with Youth

2892. As the following evidence demonstrates, Defendants have utilized the vast amount of research and tracking data they accumulated on youth smoking initiation, tastes and preferences by employing themes which resonate with youth in their marketing campaigns. Defendants have focused their attention on young people under the age of twenty-one in order to recruit replacement smokers and have emphasized the popularity, physical attractiveness, and "coolness" of their youth brands. Above all, Defendants have burnished the image of their youth brands to convey rugged independence, rebelliousness, love of life, adventurousness, confidence, self-assurance, and belonging to the "in" crowd.

(1) Philip Morris, see findings 2893 through 2911

(3) Brown & Williamson, see finding 2933

(4) R.J. Reynolds, see findings 2953 through 2972

7. Despite the Overwhelming Evidence to the Contrary, Defendants' Public Statements and Official Corporate Policies Deny that Their Marketing Targets Youth or Affects Youth Smoking Incidence

a. Defendants Claim They Restrict Their Marketing to People Twenty-one and Older

3186. All Defendants have made numerous public statements that they do not market to persons under twenty-one. From 1964 to 1991, all Defendants voluntarily agreed to abide by the industry's Advertising Code which prohibited marketing to persons under twenty-one. After 1991, when the Code was revised, all Defendants, at different times, adopted, and publicized, internal company policies not to market to persons under twenty-one.

(1) The 1964 Advertising Code

3187. On January 25, 1964, the Federal Trade Commission ("FTC") published a proposed Trade Regulation Rule for the prevention of unfair or deceptive advertising and labeling of cigarettes in relation to the health hazards of smoking.

3188. Because of mounting public pressure to curb their marketing practices, and to avoid regulation by the FTC, Defendants, through the Tobacco Institute, voluntarily adopted the Cigarette Advertising and Promotion Code in April 1964. Key aspects of the Code, as revised in 1991, include provisions prohibiting advertising: (a) that appears in magazines "primarily directed to" persons under twenty-one years of age; (b) that represents cigarette smoking as essential to social prominence, distinction, success, or sexual attraction; (c) that uses models or other characterizations who appear to be under twenty-five years of age; (d) that suggests that healthy looking models derive their attractiveness from smoking or that good health is due to smoking; (e) that depicts a smoker as any person participating in, or obviously having just participated in, a physical activity requiring stamina or athletic conditioning beyond normal recreation; (f) that makes health claims; and (g) that uses sports celebrities who have special appeal to persons under twenty-one years of age. The Code also prohibits sampling of persons under twenty-one or near schools or any other center of youth activity. Defendants have operated under the 1964 Code, as revised in 1991, until the present time.

3189. Defendants widely publicized their adoption of the Code.

3191. Authority to enforce the Code was vested in a Code Administrator. The Code stated that the Administrator was to be an independent person who would, among other duties, evaluate Defendants' marketing efforts to ensure that they did not target young people. The Code vested in the Administrator the power to reject marketing that inappropriately appealed to youth and to assess damages of up to $100,000 for violations. The first and only Administrator, who served from 1964 to 1970, was former Governor Robert B. Meyner of New Jersey.

3193. By 1970, all of the companies had abandoned the office of the Code Administrator. As a result, the Advertising Code had no enforcement mechanism.

(2) Official Corporate Policies

3198. In 1992, RJR adopted a policy which proscribed marketing to anyone under twenty-one years of age. CEO Andrew Schindler explained that the policy in fact meant that RJR would not use source data information gathered from research into the smoking preferences of eighteen to twenty-one year olds. Schindler further stated that RJR does not "interact with" or "talk to" eighteen, nineteen, and twenty

year olds, but rather "conducts its interactive marketing practices only with those 21 and older."

3200. Despite RJR's post-1992 policy proscribing marketing to anyone under twenty-one years of age, RJR made no changes in its marketing efforts. For example, RJR did not restrict the locations of cigarette vending machines to only age twenty-one plus venues. Nor did RJR withdraw or change its "Joe Camel" campaign even though the target group of the campaign was eighteen to twenty-four year olds. RJR continued to conduct research among eighteen to twenty-four year old smokers about "every aspect" of Joe Camel "for its appeal and relevancy to the target."

3202. Philip Morris has, on numerous occasions, prepared internal memoranda or "talking points" intended for Philip Morris spokespersons to use when speaking to the public. For example, talking points produced from the files of Joshua Slavitt, Director of Policy & Programs for Tobacco, Philip Morris Management Corporation, dating from or after 1990, stated: "Philip Morris directs its marketing efforts to existing adult smokers 21 years of age and older."

3205. On May 4, 1979, B & W Chairman and Chief Executive Officer Charles I. McCarty sent a letter to Joseph A. Califano, Jr., Secretary of the Department of Health, Education and Welfare. McCarty stated that B & W had a "policy against advertising or in any way promoting the sale of cigarettes to persons under 21."

b. Defendants Deny Their Marketing Influences Youth Smoking Initiation; Defendants' Explanation for Their Marketing Practices Is Not Credible

3206. Despite all of the evidence above, for several decades, Defendants have falsely denied that their marketing efforts target young people. Defendants falsely claim that all of their marketing is aimed only at encouraging the brand loyalty of adult smokers. Defendants also falsely state that marketing has no effect on youth initiation and smoking behavior.

(1) Tobacco Institute, see findings 3207 through 3213

(2) Philip Morris

3238. Philip Morris has also made numerous false and misleading statements about youth smoking and marketing. Philip Morris prepared a brochure intended to publicly promote its "thirty years of responsible marketing practices" dating from 1963 to 1993. The brochure stated: "Philip Morris Cigarette Ads are Directed to Adults Only.... Philip Morris advertises to promote brand loyalty among adults who already smoke."

(5) BATCo and Brown & Williamson

3266. BATCo and Brown & Williamson have both made numerous false and misleading statements about youth smoking and marketing.

3267. On May 4, 1979, B & W Chairman and Chief Executive Officer Charles I. McCarty wrote to Joseph A. Califano, Jr., Secretary of the Department of Health, Education and Welfare, stating that B & W had a "policy against advertising or in any way promoting the sale of cigarettes to persons under 21," and that B & W "does not have at hand the research data and other information necessary to a responsible analysis of the suggestion made in [Califano's April 26 letter]."

3268. On June 1, 1979, McCarty sent a second letter to Califano further responding to Califano's April 26, 1979 letter. In this letter, McCarty stated: "We maintain a strict policy against promoting cigarettes to persons under 21 years of age." McCarty further stated:

> We do not want children to smoke not because we agree with your oft-repeated slogan that smoking is "slow-motion suicide" but because the decision whether to smoke, we think, is a decision which should be made by adults, not children....

3269. In a document, titled "Statement of Business Conduct," dated December 21, 1993, BATCo stated that "[t]obacco advertising and marketing programmes are used to cause existing adult consumers to switch from one brand to another and are not used to encourage young people to start smoking." This "Statement" indicated that it applied to "all directors, officers, and employees" at BATCo and at "every company within the B.A.T. Industries Group of companies."

(6) R.J. Reynolds

3281. RJR has also made numerous false and misleading statements about marketing and youth smoking. An April 7, 1972 letter written by T.K. Cahill, an employee in RJR's Public Relations Department, responded to a letter from Santa Monica, California fifth-grade teacher Kenneth Bersinger's class regarding a Winston ad in the Los Angeles Times. Cahill's response stated that "[n]one of our cigarette advertising, either in its content or in the media used, is directed to youth."

3282. In a May 29, 1979 letter to Joseph A. Califano, Jr., Secretary of the Department of Health, Education and Welfare, William D. Hobbs, then Chairman and Chief Executive Officer of RJR, stated on behalf of RJR that, "we sincerely believe cigarette advertising plays no part in the process which causes teenagers to take up smoking and feel your suggestion that our Company participate in a

massive campaign aimed at teenagers is misplaced."

3284. In April 1984, RJR placed an advertisement, titled "We don't advertise to children," in numerous publications nationwide, including the April 19, 1984 edition of the weekly magazine U.S. News and World Report. It stated that "we're running ads aimed specifically at young people advising them that we think smoking is strictly for adults." It further stated that

> research shows that among all the factors that can influence a young person to start smoking, advertising is insignificant. Kids just don't pay attention to cigarette ads.... [A]ll of our cigarette ads are what we call "brand advertising." Its purpose is to get smokers of competitive products to switch to one of our brands, and to build the loyalty of those who already smoke one of our brands.... Getting smokers to switch is virtually the only way a cigarette brand can meaningfully increase its business.

8. Conclusions

3296. The evidence is clear and convincing-and beyond any reasonable doubt-that Defendants have marketed to young people twenty-one and under while consistently, publicly, and falsely, denying they do so.

3297. In response to the mountain of evidence to the contrary, Defendants claim that all the billions of dollars they have spent on cigarette marketing serves the primary purpose of retaining loyal customers ("brand loyalty"), and the secondary purpose of encouraging smokers to switch brands. They deny that any of their marketing efforts are aimed at encouraging young people to initiate smoking or to continue smoking.

3298. In fact, the overwhelming evidence set forth in this Section-both Defendants' internal documents, testimony from extraordinarily qualified and experienced experts called by the United States, and the many pictorial and demonstrative exhibits used by the Government-prove that, historically, as well as currently, Defendants do market to young people, including those under twenty-one, as well as those under eighteen. Defendants' marketing activities are intended to bring new, young, and hopefully long-lived smokers into the market in order to replace those who die (largely from tobacco-caused illnesses) or quit. Defendants intensively researched and tracked young people's attitudes, preferences, and habits. As a result of those investigations, Defendants knew that youth were highly susceptible to marketing and advertising appeals, would underestimate the health risks and effects of smoking, would overestimate their ability to stop smoking, and were price sensitive. Defendants used their knowledge of young people to create highly sophisticated and appealing marketing campaigns targeted to lure them into starting

smoking and later becoming nicotine addicts.

3299. As a result, 88% of youth smokers buy the three most heavily advertised brands -Marlboro, Camel, and Newport. Fewer than half of smokers over the age of twenty-five purchase these three brands. For example, in 2003, Marlboro, the most heavily marketed brand, held 49.2% of the twelve to seventeen year old market but only 38% of smokers over age twenty-five.

3300. Independent scientific studies published in prestigious peer-reviewed scientific journals and in official government reports have confirmed Defendants' knowledge, as demonstrated in their internal documents, that their marketing contributes substantially to the initial demand for and continuing use of cigarettes by young people. Over the past ten years, there have been a number of comprehensive reviews of the scientific evidence concerning the effects of cigarette marketing, including advertising and promotion, on smoking decisions by young people. The weight of all available evidence, including survey data, scientific studies and experiments, reports of public health and governmental bodies, and the testimony of experts in this case, supports the conclusion that cigarette marketing is a substantial contributing factor to youth smoking initiation and continuation.

3301. Defendants spent billions of dollars every year on their marketing activities in order to encourage young people to try and then continue purchasing their cigarette products in order to provide the replacement smokers they need to survive. Defendants' expenditures on cigarette advertising and promotion have increased dramatically over the past decades, and in particular since the signing of the MSA. Over the decades, Defendants have used the full range of marketing tools available to them at any particular time, including: advertising on television, radio, and billboards, and in magazines and newspapers; sponsoring events, such as sporting events, bar promotions, festivals, concerts, and contests; providing coupons, price reductions, and free packs with purchases; providing gifts with purchases (known as “continuity items”) such as t-shirts, mugs, and sporting goods; direct-mail marketing by sending magazines and other materials directly to individuals' homes; distributing free cigarette samples at retail stores, public events, bars, or other locations; and strategically locating “point of sale” advertising and promotions at retail outlets young people are most likely to frequent, such as convenience stores.

3302. In the face of this evidence, Defendants have denied, over and over, with great self-righteousness, that they have marketed to youth.

KESSLER’S Table of contents - (Part V. G is omitted) PART V. H:

V. H. At Various Times, Defendants Attempted to and Did Suppress and Conceal Scientific Research and Destroy Documents Relevant to Their Public and Litigation Positions

Plaintiff's First Amended Complaint First Cause of Action - Negligence; Second Cause of Action - Strict Products Liability; Third Cause of Action - False Representation; Fourth Cause of Action - Deceit, Fraudulent Concealment; and, Sixth Cause of Action - Breach of Express Warranty

Kessler Finding of Fact Nos. 3863 through 3885; 3887 through 3926; 3929 through 4017; and 4021 through 4035

Exemplars of Relevant Findings of Fact:

3863. Defendants attempted to and, at times, did prevent/stop ongoing research, hide existing research, and destroy sensitive documents in order to protect their public positions on smoking and health, avoid or limit liability for smoking and health related claims in litigation, and prevent regulatory limitations on the cigarette industry.

3864. The evidence of Defendants' suppression of research and destruction of documents consists of events which often seem to be unrelated and to lack a unifying thread. Defendants claim these facts, most of which are undisputed, amount to no more than a string of isolated instances which prove nothing. This explanation misses the point. The evidence is clear that on a significant number of occasions, Defendants did in fact suppress research and destroy documents to protect themselves and the industry. The fact that much additional evidence may be lacking because Defendants were successful in their efforts to suppress, conceal, and destroy materials that would have reflected adversely on their corporate interests is hardly a justification for ignoring the evidence that does exist. Moreover, in those instances where Defendants did successfully suppress, conceal, and destroy materials, it is most unlikely that there would be any evidence to reflect that since it would no longer exist. By destroying evidence, Defendants make it virtually impossible to know what materials existed prior to their destruction.

1. Suppression and Concealment of Scientific Research

3865. At various times, Defendants suppressed or otherwise concealed documents and information adverse to their public or litigation positions. For example, notes of a November 5, 1975 CTR meeting of a subcommittee of the Research Liaison Committee reveal that Ed Jacobs of Jacobs & Medinger directed that "no further formal minutes be made-also all should remove notes & previous minutes from corporate files."

3867. In 1981, Robert Northrip, a Shook, Hardy & Bacon attorney who at various times represented Philip Morris and B & W, explained at a Committee of Counsel meeting that lawyers' Special Project funding was used to allow adverse research findings to be hidden from the public.

a. R.J. Reynolds, see findings 3868 through 3871

b. BAT Group, see findings 3880 through 3906

c. Philip Morris, see findings 3907 through 3926

2. Document Destruction Policies

3929. At various times, different Defendants attempted to and did destroy documents which were adverse to their public and litigation positions on smoking and health. While these efforts were often part of larger, legitimate institutional document retention policies, at other times-as with the BAT Group-they were clearly intended to render unavailable written materials which could prove damaging to or inconsistent with Defendants' litigation position and public relations stance.

d. Findings by Other Courts

[4] 4021. Several courts, and the Special Master in this case, have ruled that Defendants have attempted to designate documents as privileged despite there being no valid basis for assertion of the privilege, or that the claimed privilege was inapplicable due to the crime-fraud exception,[FN42] or that the claimed privilege was lost as a result of its abuse.

FN42. The crime-fraud exception to a finding of privilege overcomes the privilege if it was employed in furtherance of the planning or commission of a crime or fraud. *United States v. Zolin*, 491 U.S. 554, 109 S.Ct. 2619, 105 L.Ed.2d 469 (1989).

4022. Earlier in this case, the Court adopted in its entirety the findings of Report & Recommendation # 146, in which the Special Master found that "Brown & Williamson made efforts not to physically receive smoking and health research of which it was otherwise aware in order not to have to disclose such information and threaten its litigation." *United States v. Philip Morris*, No. 1:99-cv-2496 (**D.**D.C. Feb. 23, 2004) (order # 499 adopting Report & Rec. # 146, 2004 WL 5355972). The Special Master further noted that BATCo's participation in this fraud was engineered by routing documents to B & W through outside attorneys rather than to B & W itself. *United States v. Philip Morris*, No. 1:99-cv-2496 (D.D.C. Feb. 5, 2004) (Report & Rec. # 146 at 79, adopted by order # 499).

4023. Again in this case, the Special Master, in Report & Recommendation # 155, 2004 WL 5353851, concluded that:

legal advice was sought ("Foyle ... wrote a memorandum about the Document Retention Policy describing what he found, and effectively inviting Clayton Utz to go back to the drawing board and destroy more documents"), legal advice was given ("Wilson ... proposed a strategy for handling the documents issue ... its purpose was to get rid of all the sensitive documents, but do so under the guise of an innocent house keeping arrangement ..."), and legal advice was followed ("Cannar ordered that Wills adopt the strategy proposed by Wilson").

United States v. Philip Morris, No. 1:99-cv-2496 (D.D.C. April 14, 2004) (Report & Rec. # 155 at 40-41, quoting Gulson Aff. at ¶¶ 20, 21, 27). The Special Master further concluded that there was
credible evidence to show that counsel was consulted with the intent "to destroy, create privilege over, or remove from the company's control, documents belonging to [Wills's] overseas affiliates" in order "to get rid of everything that was damaging in a way that would not rebound on the company or the BAT group as a whole."

Id. at 41 (quoting Gulson Aff. at ¶¶ 24, 25).

4024. In April 1997, the Florida Circuit Court upheld a special master's ruling that lawyers for Defendants American, Reynolds, B & W, BATCo, Philip Morris, Liggett, Lorillard, CTR, and the Tobacco Institute "undertook to misuse the attorney/client relationship to keep secret research and other activities related to the true health dangers of smoking." *Florida v. American Tobacco,* Civ. Action No. CL 95-1466 AH (Palm Beach Cty. Fla., filed Feb. 21, 1995).

4025. In *Minnesota v. Philip Morris,* the court struck claims of attorney-client privilege as a result of continued and blatant disregard of court orders, the authority of the court, and the judicial process by B & W and American. *State of Minnesota v. Philip Morris*, No. C1-94-8565, 1998 WL 257214, at *9 (Minn.Dist.Ct. Mar. 7, 1998), *mandamus denied sub nom., State by Humphrey v. Philip Morris,* No. CX-98-414 (Minn.App. Mar. 17, 1998), *petitions for further review denied sub nom., State v. Philip Morris*, Nos. CX-98-414, CX-98-431, 1998 WL 154543 (Minn. Mar. 27, 1998), *stay denied,* 523 U.S. 1056, 118 S.Ct. 1384, 140 L.Ed.2d 643 (1998) ("*Minnesota v. Philip Morris* ").

4026. In adopting the Report and Recommendation of the *Minnesota* Special Master, Judge Kenneth J. Fitzpatrick ruled that BATCo and B & W (among other defendants) have been found to have committed numerous abuses of privilege and certain violations of Court Orders and the Rules of Court.... The record supports the factual findings of the Special Master. Application of the law of privilege, and the

crime-fraud exception were properly applied by the Special Master. *Minnesota v. Philip Morris*, No. C1-94-8565 (Minn.Dist.Ct. Dec. 30, 1997).

4027. In *Minnesota v. Philip Morris*, the court found that Defendants Philip Morris, RJR, B & W, BATCo, American, Lorillard, CTR, and the Tobacco Institute "claimed privilege for documents which are clearly and inarguably not entitled to protections of privilege;""that many documents examined contained nothing of a privileged nature, establishing a pattern of abuse;" and that these Defendants "have been found to have committed numerous abuses of privilege." Based upon the "intentional and repeated misuse of claims of privilege [which are] intolerable in a court of law," the court found that "an appropriate sanction for such abuse is release of all documents for which privilege is improperly claimed." The court also adopted the special master's findings that for several categories of documents, including scientific reports, the crime-fraud exception to the attorney-client privilege applied. *Minnesota*, 1998 WL 257214 at *9.

4028. In *Washington v. American Tobacco*, the court issued several rulings in which it determined that numerous documents for which Defendants American, B & W, Liggett, Lorillard, Philip Morris, Reynolds, CTR, and the Tobacco Institute had asserted privilege were subject to the crime-fraud exception and were therefore "de-privileged." The bases for the findings included "that defendants attempted to misuse legal privileges to hide research documents;""that attorneys controlled corporate research and/or supported the results of research regarding smoking and health;""that the industry, contrary to its public statements, was suppressing information about smoking and health;" and "that Special Account # 4 was used to conceal problematic research." *Washington v. American Tobacco*, No. 96-2-15056-8 SEA (King Cty. Sup.Ct.1998).

4029. In *Sackman v. Liggett Group*, the court found that attempts by Liggett, Philip Morris, B & W, Reynolds, Lorillard, and CTR to designate CTR Special Project documents as privileged was inappropriate. 173 F.R.D. 358, 362-64 (E.D.N.Y.1997). The court concluded that, despite lawyer involvement in Special Projects, the documents were not privileged because they were prepared to further the public relations position of the tobacco manufacturers and that any usefulness in litigation "was merely an incidental benefit." *Sackman*, 173 F.R.D. at 363.

4030. The court in *Burton v. R.J. Reynolds* found that numerous documents identified as privileged by Reynolds and American were in fact not privileged, including memoranda relating to research and development, letters from outside counsel on scientific research, literature reviews prepared by scientists at the direction of counsel, minutes of research-related meeting, and notes made by employees at industry meetings on smoking and health research. 170 F.R.D. 481, 490 (D.Kan.1997); *Burton v. R.J. Reynolds Tobacco*, 167 F.R.D. 134, 142

(D.Kan.1996).

4031. In *Carter v. Brown & Williamson*, the court found that even if a privilege existed, an issue that the court did not reach, the crime-fraud exception applied to certain B & W documents (the Merrell Williams documents). *Carter v. Brown & Williamson*, Case No. 95-00934 CA (Duval Cty. Cir. Ct., Fla., Tran. July 26, 1996, at 1329-32).

4032. In *Haines v. Liggett Group*, 140 F.R.D. 681, 689 (D.N.J.1992), vacated on procedural grounds, 975 F.2d 81 (3rd Cir.1992), the court, following an *in camera* review of 1,500 documents, confirmed "plaintiff's contentions of the explicit and pervasive nature of the alleged fraud by defendants [Liggett, Lorillard, Reynolds, Philip Morris, and the Tobacco Institute] and defendants' abuse of the attorney-client privilege as a means of effectuating that fraud." Specifically, the court found "that the attorney-client privilege was intentionally employed to guard against ... unwanted disclosure." *Haines*, 140 F.R.D. at 684. Finally, the court stated that defendants and their lawyers "abused the attorney-client privilege in their efforts to effectuate their allegedly fraudulent schemes." *Id.* at 695.

4033. In (*Re Mowbray) Brambles Australia Ltd. v. British American Tobacco Australia Services Ltd.*[2006] NSWDDT 15, at Par. 56, 57, the Dust Diseases Tribunal of New South Wales concluded, after considering evidence that included the trial testimony of Frederick Gulson in the present litigation, that "BATAS in 1985 drafted or adopted the Document Retention Policy for the purpose of a fraud ...."; that "[t]he terms of the policy would appear to be so contrived that BATAS may secure legal sanction for the stated policy, while nevertheless selectively destroying prejudicial documents"; and that BATAS' communications to its lawyers made for the purpose of obtaining advice about document destruction under the 1985 Document Retention Policy "were communications in furtherance of the commission of a fraud...." FN43

FN43. While it would appear, although it is not perfectly clear, that Defendant BATAS has not yet had an opportunity to present evidence and argument against application of the Australian crime-fraud exception to the privileged documents in issue, Mr. Gulson was fully cross-examined by BATAS and his testimony was credited by that Court. *Id.* at ¶ 51, 52.

4. Conclusions

4034. The foregoing Findings of Fact demonstrate that, over the course of approximately fifty years, different Defendants, at different times, took the following actions in order to maintain their public positions on smoking and disease-related issues, nicotine addiction, nicotine manipulation, and low tar

cigarettes, in order to protect themselves from smoking and health related claims in litigation, and in order to avoid regulation which they viewed as harmful: they suppressed, concealed, and terminated scientific research; they destroyed documents including scientific reports and studies; and they repeatedly and intentionally improperly asserted the attorney-client and work product privileges over many thousands of documents (not just pages) to thwart disclosure to plaintiffs in smoking and health related litigation and to federal regulatory agencies, and to shield those documents from the harsh light of day.

4035. While it is true that some of these efforts were unsuccessful and some of the elaborate document "retention" policies were either not fully implemented or not implemented at all, the fact remains that many were fully complied with. Consequently, we can never know the full extent of the evidence destroyed and lost to public view.